IN THE SUPREME COURT
OF THE STATE OF VERMONT

CASE NO. 25-AP-005

IN RE PETITION OF RANDOLPH DAVIS SOLAR LLC

APPEALED FROM THE VERMONT PUBLIC UTILITY COMMISSION
Case No. 21-2939-NMP

SUPPLEMENTED PRINTED CASE
of
Appellee, Randolph Davis Solar LLC

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STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Randolph Davis Solar LLC for a certificate of public good pursuant to 30 V.S.A. §§ 248 and 8010, authorizing installation and operation of a 500 kW (AC) photovoltaic group net-metering system in Randolph, Vermont	)	Case No. 21-2939-NMP

SUPPLEMENTAL TESTIMONY OF MARTHA STASKUS ON BEHALF OF PETITIONER

February 25, 2022

Ms. Staskus' supplemental testimony responds to the Hearing Officer's record requests made at the Scheduling Conference held February 16, 2022.

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STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Randolph Davis Solar LLC for a certificate of public good pursuant to 30 V.S.A. §§ 248 and 8010, authorizing installation and operation of a 500 kW (AC) photovoltaic group net-metering system in Randolph, Vermont	)))))	Case No. 21-2939-NMP

SUPPLEMENTAL PREFILED TESTIMONY OF
MARTHA STASKUS
ON BEHALF OF PETITIONER

1. Introduction

Q1. Please state your name, occupation, and business address.

A1. My name is Martha Staskus. I am Chief Development Officer of Norwich Technologies, Inc. ("Norwich Solar"), which has offices at 15 Railroad Row, Suite 101, White River Junction, Vermont 05001. I have previously submitted testimony and exhibits on behalf of Randolph Davis Solar LLC (the "Petitioner") in this proceeding.

Q2. What is the purpose of your supplemental prefiled testimony?

A2. My supplemental testimony responds to the Hearing Officer's request made during the February 16, 2022 Scheduling Conference, that the Petitioner provide (i) a further explanation of how the site plan submitted on February 16, 2022 (Exh. RDS MS-2 (Revised 2/09/22)) has changed from the original version, requesting a layer to easier see where the slope is 25 percent or more, (ii) an updated set of Elevation Drawings (Exh. RDS MS-3), (iii) supplemental prefiled testimony that describes the changes to the Site Plan and Elevation Drawings, and (iv) to provide a chronology of the efforts made by the Petitioner to provide information to the Town of Randolph Planning Commission and Selectboard.

2. Supplemental Information Requested by the Hearing Officer

Q3. Has the Petitioner prepared the requested updated Site Plan and Elevation Drawings?

A3. Yes. They are included with this supplemental testimony as Exhibits RDS MS-2A (Revised 2/9/22 with slope layer added 2/22/22) and RDS MS-3 (Revised 2/22/22). As I explain below, Exhibit RDS MS-2A is the same Site Plan layout shown in Exhibit RDS MS-2 (rev 2/9/22) submitted to the Randolph Selectboard on 2/10/22 and the Commission on 2/16/22, however to address the Hearing Officer's request to see the areas easier, the areas that exceed 25% slopes are now illustrated in yellow. So in other words, it is a version of the same 2/9/22 Site Plan with additional information added per the request of the Hearing Officer.

Q4. Please describe the changes made to the Project's original Site Plan submitted (issued 8/4/21), that of RDS MS-2 (rev 2/9/22) and the site plan filed with this supplemental testimony RDS MS-2A (rev 2/9/22 with slope layer added 2/22/22).

A4. Following the Randolph Planning Commission's December 10, 2021 request for more information about the topography on site and the Randolph Selectboard's January 13, 2022 meeting with similar questions, I decided to expedite the gathering of on-site topography so that a site plan could be reviewed at their February 10, 2022 meeting that demonstrates the array can be installed and avoid slopes in excess of 25% in the existing Limit of Disturbance (see chronology below). To accomplish this I hired Horizon Engineering, a Vermont licensed surveyor, to gather on-site field topographic data and requested Krebs & Lansing, a Vermont licensed professional civil engineering firm, to redesign the array,

based upon the on-site survey and within the existing Limit of Disturbance, to areas that did not contain slopes greater than 25%. See Exhibit RDS MS-12, letters from Horizons Engineering and Krebs & Lansing provided to the Selectboard on February 10, 2022.

Based upon the questions at the PUC February 16, 2022 Scheduling Conference, to clarify Exhibit RDS MS-2 (rev 2/9/22) that had the redesigned array only, Exhibit RDS MS-2A is provided here, which has yellow shading added to highlight the areas in excess of 25% slopes. The difference between the original Exhibit RDS MS-2 (issued 8/4/21) and Exhibit RDS MS-2 (rev 2/9/22) is the later illustrates the redesigned layout. The difference between the original Exhibit RDS MS-2 (issued 8/4/21) and Exhibit RDS MS-2A, filed with this testimony, is the later illustrates the redesigned layout as well as yellow shading representing slopes in excess of 25%. Exhibit RDS MS-2A also demonstrates that the redesigned solar panel rows layout can be installed in areas with slopes less than 25% slopes while staying within the original Limit of Disturbance.

Q5. Please describe the changes to the Elevation Drawings.

A5. Exhibit RDS MS-3 (rev 2/22/22), the Elevation Drawings, has been updated to present the relocation of rows. The yellow highlight on the existing grade dashed line are the areas of slopes in excess of 25%, based upon the on-site survey data.

Q6. Please provide the chronology of the efforts made by Petitioner to provide information to the Town of Randolph Planning Commission and Selectboard regarding the Project design.

A6. See the table below that chronicles interaction with the Randolph Planning Commission and Selectboard for the over nine-month period from May 4, 2021 through February 10, 2022.

Date	Event
May 4, 2021 June 1, 2021	Planning Commission meetings with warned agenda items for Norwich Solar's request for preferred siting. Norwich Solar attended both meetings.
June 10, 2021	Selectboard meeting with warned agenda item for Norwich Solar's request for preferred siting. Norwich Solar attended the meeting.
June 21, 2021	PUC 45-Day Advanced Notice of Application letter mailed to adjoining properties and regulatory bodies, including the Planning Commission and Selectboard.
August 18, 2021	The PUC application was deemed complete. Within 2 business days, hardcopy of the application was mailed to same parties as above, with electric copy to state regulators and GMP.
December 7, 2021	Planning Commission meeting agenda item "a. Discussion on slope issues related to the Solar Array project on Davis Road in East Randolph". Norwich Solar was unaware of the agenda item and was therefore not in attendance.
December 10, 2021	Planning Commission Chair requested Norwich Solar provide clarification to discussion at 12/7/21 meeting.
December 13, 2021	Norwich Solar provided additional information and assurances to the Planning Commission as requested. See Exh. RDS MS-13.
December 14, 2021	Planning Commission Chair sent notification of acceptance. Pertinent text below, as letter was filed to the PUC on December 15, 2021 as Exhibit A, and is included with this testimony as Exh. RDS MS-14.

The Planning Commission letter states:

In response to our Notice of Discrepancy (subject as above) the Randolph Planning Commission received your response on 13 Dec 2021 and accepts your guarantee that "prior to installation of the panels, Norwich Technologies will confirm the grade slopes in the area of the solar panels by having a Vermont licensed surveyor set grade stakes for the solar array rows location and document the slopes. The parties have noted specific concern to the terrain on the eastern side of the array, and again, confirmation will be secured before any panels are installed in that location. The array will be arranged so that solar panels within the current limit of disturbance are not installed on slopes greater than 25%. The onsite survey data can be provided to the Town and the Allen/Binders upon request."

We request that the onsite survey data mentioned above be provided to both the Town of Randolph and the Allen/Binders. We further request to see your final Solar Array plot plan prior to construction.

January 13, 2022	Selectboard meeting agenda item "c. Discuss Davis Road Solar Project (per request by Michael Binder)." Norwich Solar attended the meeting. The Selectboard moved to continue the discussion to their February 10, 2022 meeting.
February 10, 2022	Selectboard Meeting continuance of discussion. Norwich Solar attended this meeting. For further clarity for the Selectboard, Norwich Solar expedited an on-site topographic field survey and with that data redesigned the layout to avoid installation of solar panels rows on slopes greater than 25% within the existing limit of disturbance.

See Exhibit RDS MS-15, Selectboard meeting minutes from February 10, 2020, which state in relevant part:

> *There was discussion about there being no need to take action on the preferred siting letter if there was no intent or motion to rescind it; the letter's issuance stands as approved in June 2021 at this time.*

3. Conclusion

Q7. Does this conclude your testimony?

A7. Yes.

8497594_3:

17 Sunset Terrace, Newport, VT 05855 • Ph 802-334-6434 • Fax 802-334-5602 • www.horizonsengineering.com

February 9, 2022

Re: Norwich Solar Technologies – Randolph, Davis Road Array Slopes

To whom it may concern,

This letter is to verify that slope measurements on the project site plan were confirmed by fieldwork performed on January 19, 2022 by Horizons Engineering, a Vermont Licensed Surveyor.

Sincerely,

Nathan P. Nadeau, LS

KREBS & LANSING
CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, VT 05446

P: (802) 878-0375 | email@krebsandlansing.com

February 9, 2022

RE: Norwich Solar Technologies
Site Plan for Randolph Davis Solar LLC
Davis Road, Randolph

To Whom It May Concern,

This letter is to verify that the location of the solar array shown on the site plan for Randolph Davis Solar, revised 2/09/2022, is designed to be installed on slopes less than 25%, based upon a topographic survey performed by Horizons Engineering on January 19, 2022.

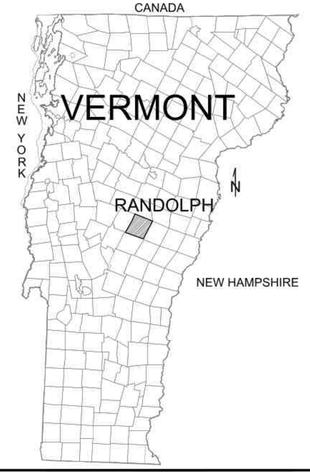
Sincerely,

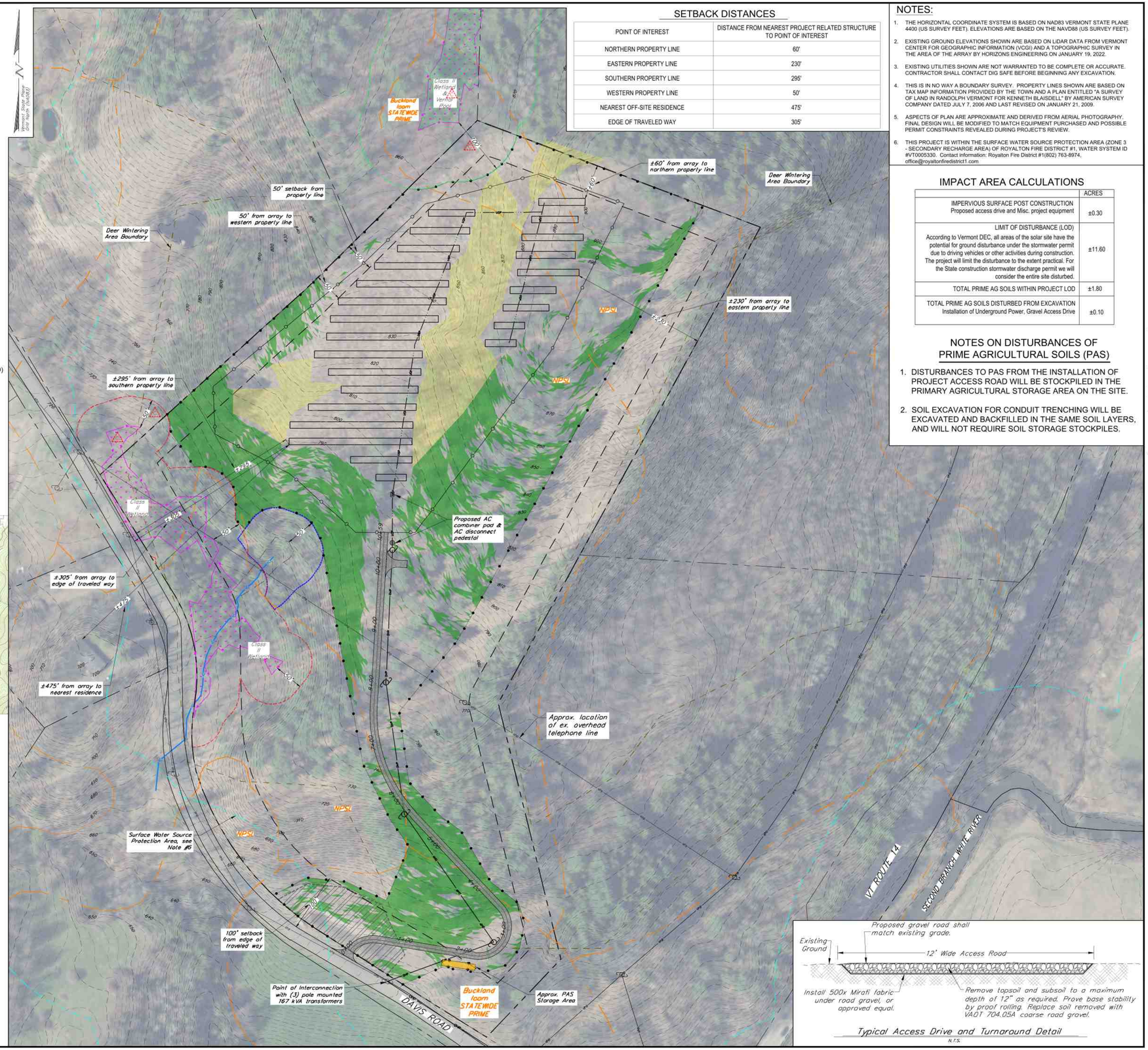
Jesse Carswell, P.E.

LEGEND:

- EXISTING / PROPOSED POWER POLE
- EXISTING GRADE 10-FT CONTOUR LINES (BASED ON VCGI DATA)
- EXISTING GRADE 2-FT CONTOUR LINES (BASED ON VCGI DATA)
- EXISTING OVERHEAD POWER LINES
- APPROXIMATE PROPERTY LINES
- APPROXIMATE PROJECT PROPERTY LINES
- SETBACKS TO SOLAR PANEL RACKING
- WETLANDS (LOCATED BY AE)
- WETLAND BUFFER
- STREAM (LOCATED BY AE)
- STREAM TOP OF BANK (LOCATED BY AE)
- RIPARIAN BUFFER
- MAPPED SOIL BOUNDARY (VCGI)
- PROPOSED 12' GRAVEL ACCESS ROAD
- PROPOSED UNDERGROUND POWER
- PROPOSED OVERHEAD POWER
- PROPOSED UPGRADED OVERHEAD POWER
- PROPOSED PERIMETER FENCE
- PROPOSED FIXED SOLAR PANEL RACKING
- PROPOSED STAGING AREA
- PROPOSED CLEARING AND LIMIT OF DISTURBANCE (LOD)
- SURFACE WATER SOURCE PROTECTION AREA (VCGI)
- DEER WINTERING AREA (VCGI)
- PAS STORAGE AREA
- EXISTING GRADE AREAS GREATER THAN 25% SLOPE BASED ON ON-SITE TOPOGRAPHIC SURVEY
- EXISTING GRADE AREAS GREATER THAN 25% SLOPE BASED ON LiDAR DATA FROM VCGI
- VERNAL POOL (LOCATED BY AE)
- VERNAL POOL BUFFER

LOCATION MAP
SCALE: 1" = 1/2 MILE





SETBACK DISTANCES

POINT OF INTEREST	DISTANCE FROM NEAREST PROJECT RELATED STRUCTURE TO POINT OF INTEREST
NORTHERN PROPERTY LINE	60'
EASTERN PROPERTY LINE	230'
SOUTHERN PROPERTY LINE	295'
WESTERN PROPERTY LINE	50'
NEAREST OFF-SITE RESIDENCE	475'
EDGE OF TRAVELED WAY	305'

NOTES:

1. THE HORIZONTAL COORDINATE SYSTEM IS BASED ON NAD83 VERMONT STATE PLANE 4400 (US SURVEY FEET). ELEVATIONS ARE BASED ON THE NAVD88 (US SURVEY FEET).
2. EXISTING GROUND ELEVATIONS SHOWN ARE BASED ON LIDAR DATA FROM VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI) AND A TOPOGRAPHIC SURVEY IN THE AREA OF THE ARRAY BY HORIZONS ENGINEERING ON JANUARY 19, 2022.
3. EXISTING UTILITIES SHOWN ARE NOT WARRANTED TO BE COMPLETE OR ACCURATE. CONTRACTOR SHALL CONTACT DIG SAFE BEFORE BEGINNING ANY EXCAVATION.
4. THIS IS IN NO WAY A BOUNDARY SURVEY. PROPERTY LINES SHOWN ARE BASED ON TAX MAP INFORMATION PROVIDED BY THE TOWN AND A PLAN ENTITLED "A SURVEY OF LAND IN RANDOLPH VERMONT FOR KENNETH BLAISDELL" BY AMERICAN SURVEY COMPANY DATED JULY 7, 2006 AND LAST REVISED ON JANUARY 21, 2009.
5. ASPECTS OF PLAN ARE APPROXIMATE AND DERIVED FROM AERIAL PHOTOGRAPHY. FINAL DESIGN WILL BE MODIFIED TO MATCH EQUIPMENT PURCHASED AND POSSIBLE PERMIT CONSTRAINTS REVEALED DURING PROJECT'S REVIEW.
6. THIS PROJECT IS WITHIN THE SURFACE WATER SOURCE PROTECTION AREA (ZONE 3 - SECONDARY RECHARGE AREA) OF ROYALTON FIRE DISTRICT #1, WATER SYSTEM ID #VT0005330. Contact information: Royalton Fire District #1(802) 763-8974, office@royaltonfiredistrict1.com

IMPACT AREA CALCULATIONS

	ACRES
IMPERVIOUS SURFACE POST CONSTRUCTION Proposed access drive and Misc. project equipment	±0.30
LIMIT OF DISTURBANCE (LOD) According to Vermont DEC, all areas of the solar site have the potential for ground disturbance under the stormwater permit due to driving vehicles or other activities during construction. The project will limit the disturbance to the extent practical. For the State construction stormwater discharge permit we will consider the entire site disturbed.	±11.60
TOTAL PRIME AG SOILS WITHIN PROJECT LOD	±1.80
TOTAL PRIME AG SOILS DISTURBED FROM EXCAVATION Installation of Underground Power, Gravel Access Drive	±0.10

NOTES ON DISTURBANCES OF PRIME AGRICULTURAL SOILS (PAS)

1. DISTURBANCES TO PAS FROM THE INSTALLATION OF PROJECT ACCESS ROAD WILL BE STOCKPILED IN THE PRIMARY AGRICULTURAL STORAGE AREA ON THE SITE.
2. SOIL EXCAVATION FOR CONDUIT TRENCHING WILL BE EXCAVATED AND BACKFILLED IN THE SAME SOIL LAYERS, AND WILL NOT REQUIRE SOIL STORAGE STOCKPILES.

Typical Access Drive and Turnaround Detail
N.T.S.

Randolph Davis Solar, LLC

Davis Road
Randolph, Vermont

NORWICH SOLAR TECHNOLOGIES
15 RAILROAD ROW
WHITE RIVER JUNCTION, VERMONT 05001
802.281.3213
SALES@NORWICHTECH.COM
WWW.NORWICHTECH.COM

KREBS & LANSING CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 878-0375
www.krebsandlansing.com

ISSUED FOR PERMIT REVIEW
NOT FOR CONSTRUCTION

SOURCE DATA LEGEND

MAPPING SOURCE DATA USED FOR PLAN COMPILATION

Electrical Design:
Norwich Solar Technologies
15 Railroad Row
White River Junction, Vermont 05001

Civil Engineering:
Krebs and Lansing Consulting Engineers, Inc.
164 Main Street, Suite 201
Colchester, Vermont 05446

Environmental:
Arrowwood Environmental
950 Bert White Rd
Huntington, Vermont 05462

0' 80' 160' 240'
0" 1" 2" 3"
STANDARD GRAPHIC SCALE (1" = 80')
VALID WHEN PLOTTED ON 24" BY 36" MEDIA

0' 86.0' 172.0'
0" 0.5" 1"
REDUCED GRAPHIC SCALE (1" = 172.0')
VALID WHEN PLOTTED ON 11" BY 17" MEDIA

Proposed Solar Array

SET REV.	REVISIONS/COMMENTS	DATE
1	Revised array onto existing slopes less than 25%	2-22-22
2	Added areas within LOD of the access road with existing slopes greater than 25% based on LIDAR	4-18-22
3	Updated environmental buffers. Revised array & LOD on existing slopes less than 25%	6-17-22
	Show slopes greater than 25% on entire LOD. Revise array to avoid steep slopes	7-13-22

Drawing Title:
PRELIMINARY SITE PLAN

DATE of Issue: 8/04/2021
Drawn by: JBC Checked by: JBC
Project No.: 21294 Scale: 1" = 80'
Drawing No.: C-100 Rev No.:

Low Risk Site Handbook

for

Erosion Prevention and Sediment Control

VERMONT
ENVIRONMENTAL CONSERVATION

February 2020

Low Risk Site Handbook for Erosion Prevention and Sediment Control

A construction stormwater discharge permit must be obtained for construction activity that results in total land disturbance of equal to or greater than 1 acre, including construction activities where disturbance is less than 1 acre, but is part of a larger common plan of development, if the larger development will ultimately result in the disturbance of 1 or more acres.

Vermont Construction General Permit (CGP) 3-9020 guides an applicant in assessing the potential risk to water quality from the proposed construction activity and categorizes the project activity as Low Risk, Moderate Risk, or that which requires an Individual Permit.

The practices in this handbook serve as the required Erosion Prevention and Sediment Control Plan for construction activity that is determined to be “Low Risk” under CGP 3-9020.

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Section 3: Additional Resources

Section 1
Introduction

What is erosion prevention and sediment control?

Stormwater runoff carrying sediment into streams, lakes, and wetlands is a large contributor to surface water quality problems in Vermont. Sediment discharges from unmanaged construction sites can adversely impact aquatic habitat, and may have lasting impacts on fish and other aquatic organisms.

On most construction sites, the existing vegetation that holds the soil in place and protects it from the erosive forces of rain and runoff is removed, leaving large areas of soil exposed. During rainfall or snowmelt, the exposed soil may be easily eroded and transported to nearby streams, lakes, or wetlands*.

To prevent this from happening, a small number of practices to prevent erosion and contain soil on the construction site must be used. The most effective approach to prevent a sediment discharge is temporary and final stabilization of exposed soils. Controls for sediment laden runoff are necessary at times, but should not be used as the primary means of prevention.

*Projects involving work within a jurisdictional (perennial) waterway for stream alteration, please contact your regional River Management Engineer for technical and permitting assistance.

*Projects involving work within or adjacent to jurisdictional lakes or buffers, please contact your regional Lakes and Ponds permitting staff for technical and permitting assistance.

*Projects involving work within jurisdictional wetlands or buffers, please contact your regional Wetland Ecologist for technical and permitting assistance.

Section 2
The Requirements

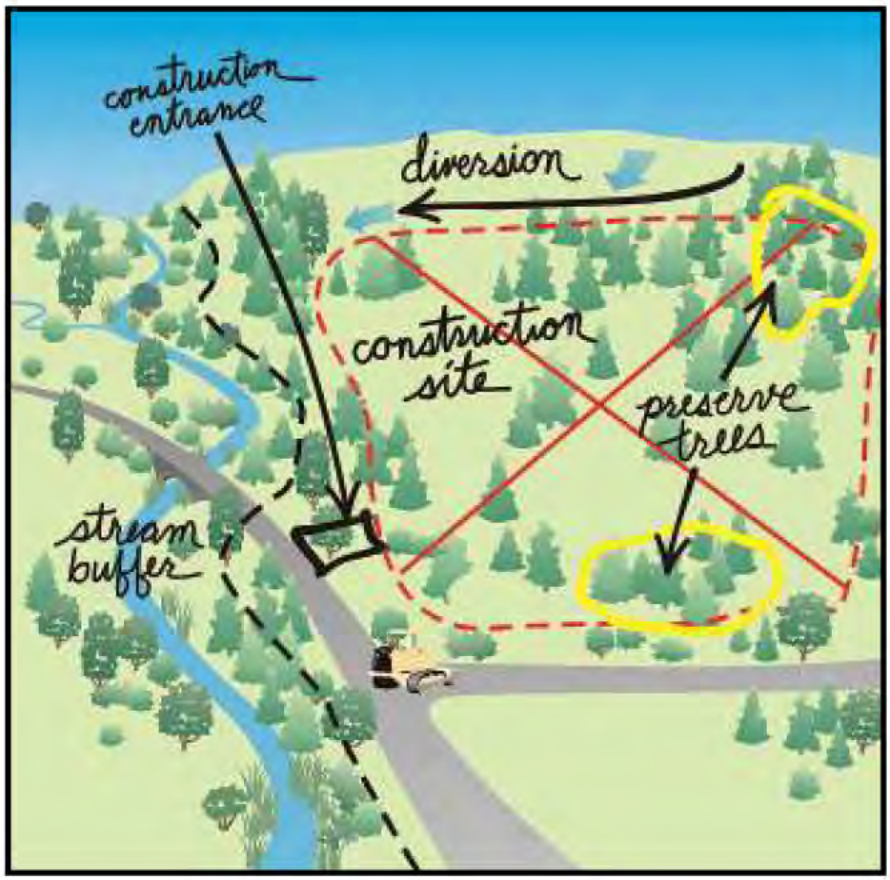
1. Demarcate Limits of Disturbance

Purpose:

Delineating the site will help to: limit the area of disturbance to only what is necessary for construction, prevent unauthorized disturbance, preserve existing vegetation, and limit erosion potential on the site.

Requirement:

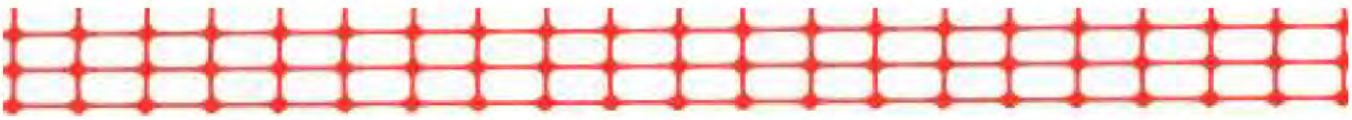
You must physically mark the limits of construction activity using one of the methods described below.



How to comply:

Before initiating any earth disturbing activities, install a perimeter fence, orange barrier tape, or flagging on stakes or trees to physically demarcate the approved limits of earth disturbance.

Properly placed barrier tape marks the boundaries and limits of construction on this site.



2. Pollution Prevention

Purpose:

Many construction sites require storage of chemicals and materials that have detrimental effects if released into our waterways. A storage plan for these potential pollution sources as well as a spill prevention and clean up plan are required to mitigate these risks.

Requirement:

Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained in accordance with the following requirements.

How to comply:

1. Minimize the exposure of the following to precipitation and to stormwater:

    - building materials,
    - building products,
    - construction wastes,
    - trash,
    - landscape materials,
    - fertilizers,
    - pesticides,
    - herbicides,
    - detergents,
    - sanitary waste, and
    - other materials present on the site.

2. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

3. Limit Concurrent Earth Disturbance

Purpose:

Limit the amount of soil exposed at one time to reduce the potential erosion on the construction site.

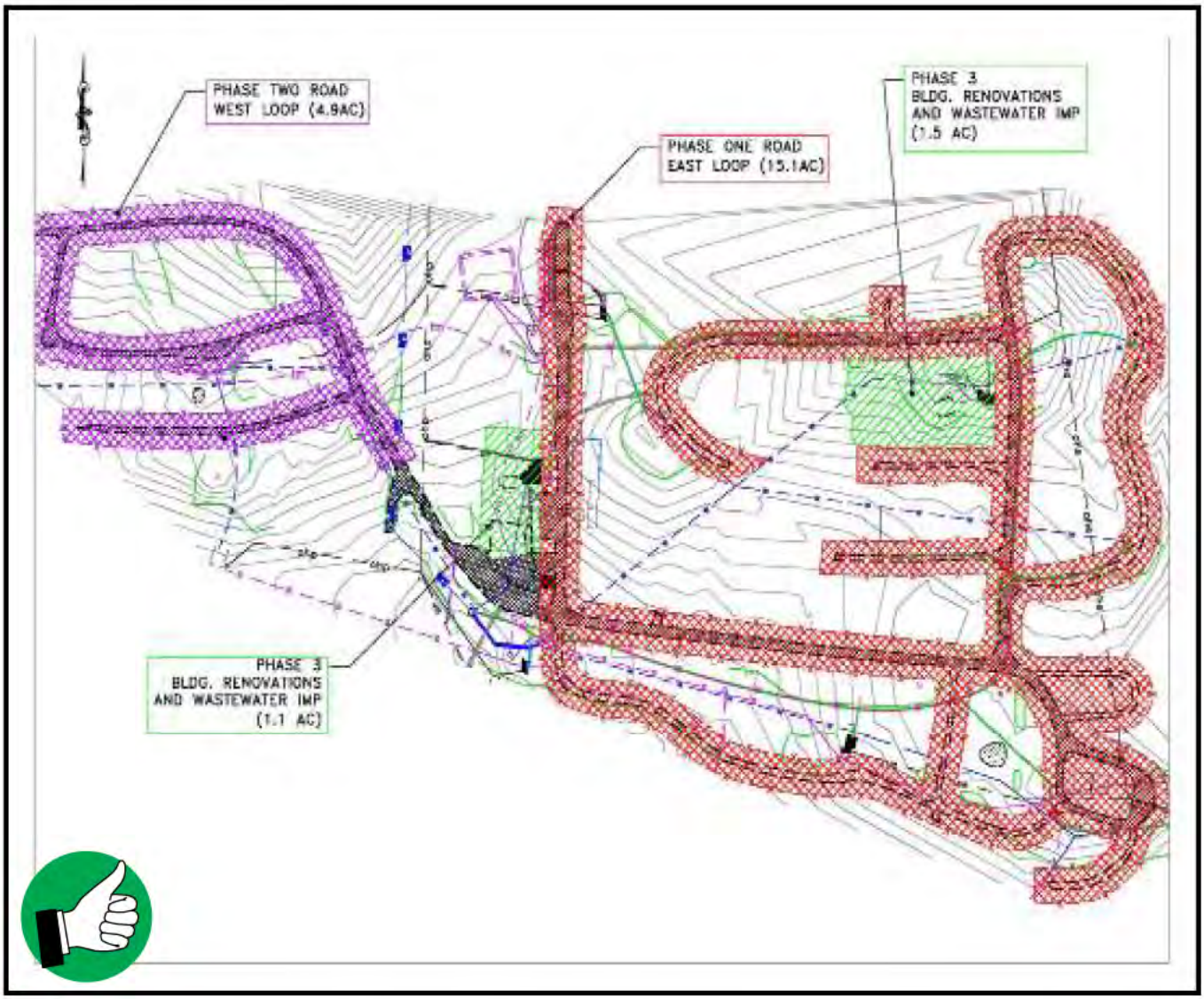
Requirement:

The maximum area of concurrent earth disturbance is specified on the site's written authorization to discharge. Earth disturbance at any one time cannot exceed the maximum concurrent disturbance identified in the authorization. Areas that are at final stabilization or that have been temporarily stabilized in accordance with Section 4 of this handbook, are not counted toward the maximum concurrent disturbance area.

How to comply:

Plan ahead and phase the construction activities to ensure that no more than the permitted maximum concurrent acreage is disturbed and unstabilized at one time.

Be sure to properly stabilize exposed soil using one of the methods introduced in Section 4 of this handbook before beginning work in a new section of the site.



4. Site Stabilization

Purpose:

Seeding and mulching, applying erosion control matting, and hydroseeding are all methods to temporarily stabilize exposed soil and prevent soil erosion prior to vegetative growth. Mulches and matting protect the soil surface while grass is establishing. Areas of earth disturbance may also be stabilized with stone, such as rip-rap or gravel, or other impervious surfaces such as pavement and concrete.

Requirements for Temporary Stabilization:

All areas of earth disturbance must have temporary or final stabilization within 14 days of initial disturbance, as stated in the project authorization. After this time, disturbed areas must be temporarily stabilized or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site.

The following exception applies:

- Temporary stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation, utility trenches), provided any dewatering, if necessary, is conducted in accordance with Part 13.

How to comply:

As required by the authorization, temporary stabilization for areas of earth disturbance shall be completed utilizing one or more of the methods below:

Hay or Straw Mulch

Mulching Rates

April 16 - Oct. 14 -- Hay or Straw*: 1 inch deep (1-2 bales/1000 s.f.)

Oct. 15 - April 15 -- Hay or Straw*: 2 inch deep (2-4 bales/1000 s.f.)

*seed may also be incorporated

Excellent application of hay mulch. Good mulch cover and perimeter control around soil stockpile.

Wood Chip Mulch or Stump Grindings

Cover entire area with 2-7 inches or more of wood chip mulch or stump grindings.

Good application of wood chip mulch and stump grindings.

Hydroseed

As per manufacturer's instructions.

- Must include mulch component
- Not acceptable stabilization for winter construction period

Excellent application of hydroseed with a mulch component. Entire soil surface has been covered and is temporarily stabilized.

Poor hydroseed application. Not applied at the appropriate rate, soil not prepared, and very little mulch component in mix.

Requirements for Dust Control:

Construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing during dry periods where off-site damage may occur if dust is not controlled shall be sprayed with water to prevent dust mobilization. **Chemical applications, including the use of chloride, shall not be applied without written approval from the VT DEC.**

Requirements for Final Stabilization:

All areas of disturbance must have permanent stabilization within 48 hours of reaching final grade.

- Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.
- Prepare bare soil for seeding by grading the top 4 to 6 inches of soil and removing any large rocks or debris, and apply seed per suppliers specifications.

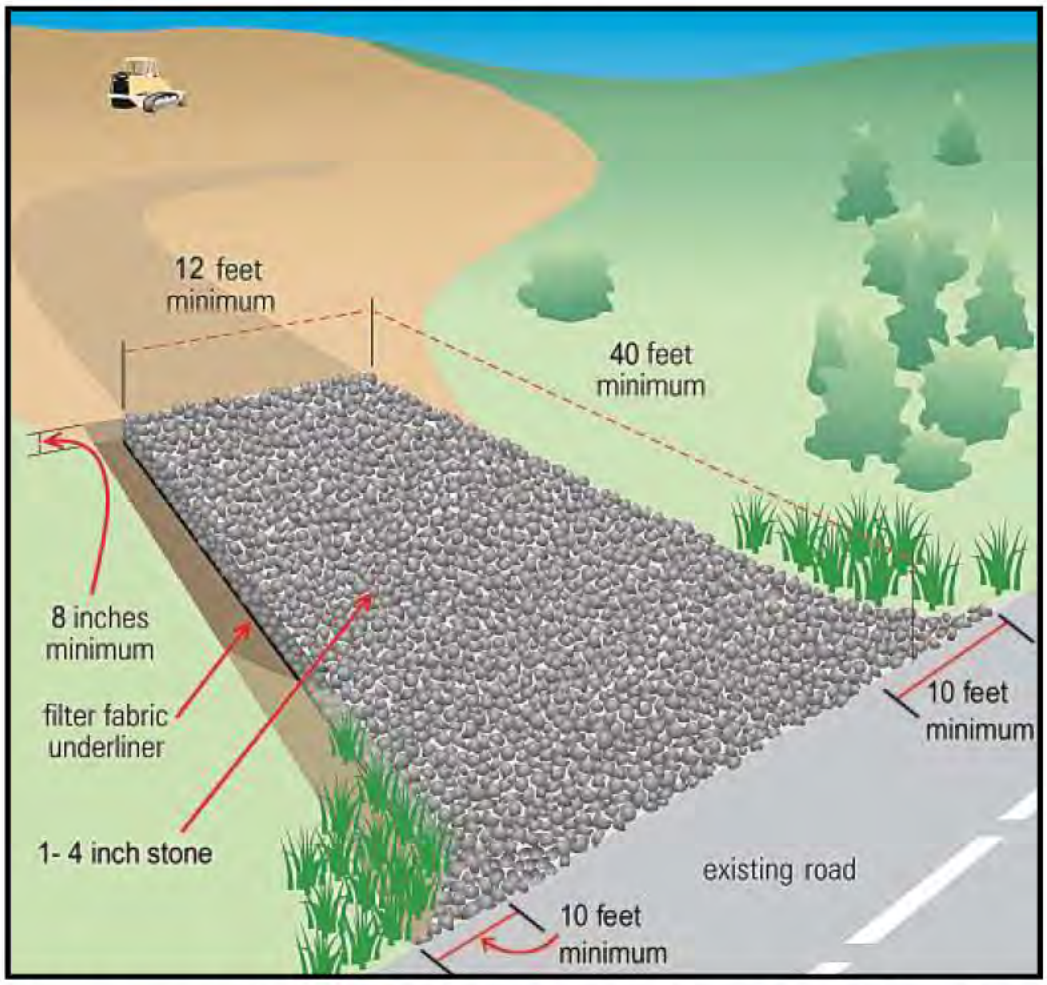
5. Stabilized Construction Access

Purpose:

A stabilized construction access helps remove mud and sediment from vehicles and equipment to prevent tracking onto streets.

Requirements:

If there will be any vehicle or equipment traffic off of the construction site, you must install a stabilized construction access at the start of construction.



Construction access detail. Access pad must keep mud from tracking onto both paved and gravel roads.

How to install:

Rock Size: Use a mix of 1 to 4 inch stone
Depth: 8 inches minimum
Width: 12 feet minimum, flared at road for vehicle turning
Length: 40 feet minimum (or length of driveway for residential projects, if shorter)
Geotextile: Place filter cloth under entire stone bed

Maintenance:

Redress with clean stone or scarify to open voids as required to keep sediment from tracking onto the street.

Good stabilized construction access. Adequate width to accommodate construction traffic and prevent mud tracking offsite. Ensure that the pad is 8 inches deep and 40 feet long.

Poor construction access. Rock pad is poorly constructed; rock is too small. Filter fabric is required under the 1 - 4 inch rock. Mud should not be tracked onto street.

- Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day.
- Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal.
- You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the state.

6. Divert Upland Runoff

Purpose:

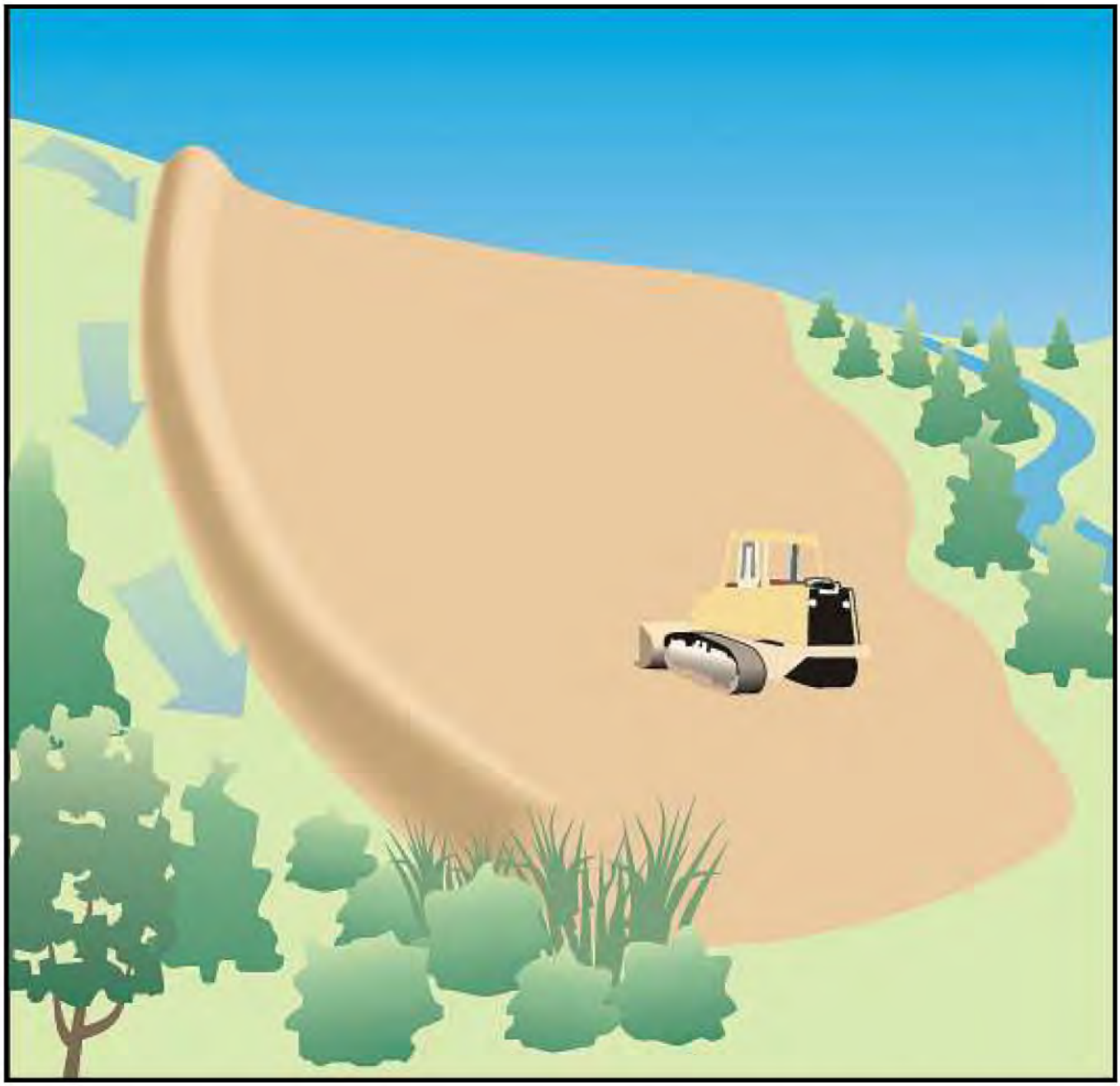
Diversion berms intercept stormwater runoff contributing from above the construction site and direct it around the disturbed area. This prevents offsite runoff from entering the construction site, thus reducing the potential for erosion and reducing the drainage area contributing to the site.

Requirements:

If stormwater runoff contributes to the construction site from upslope areas and the site meets the following two conditions, you are required to first install a diversion berm and stabilized swale before disturbing any additional soil.

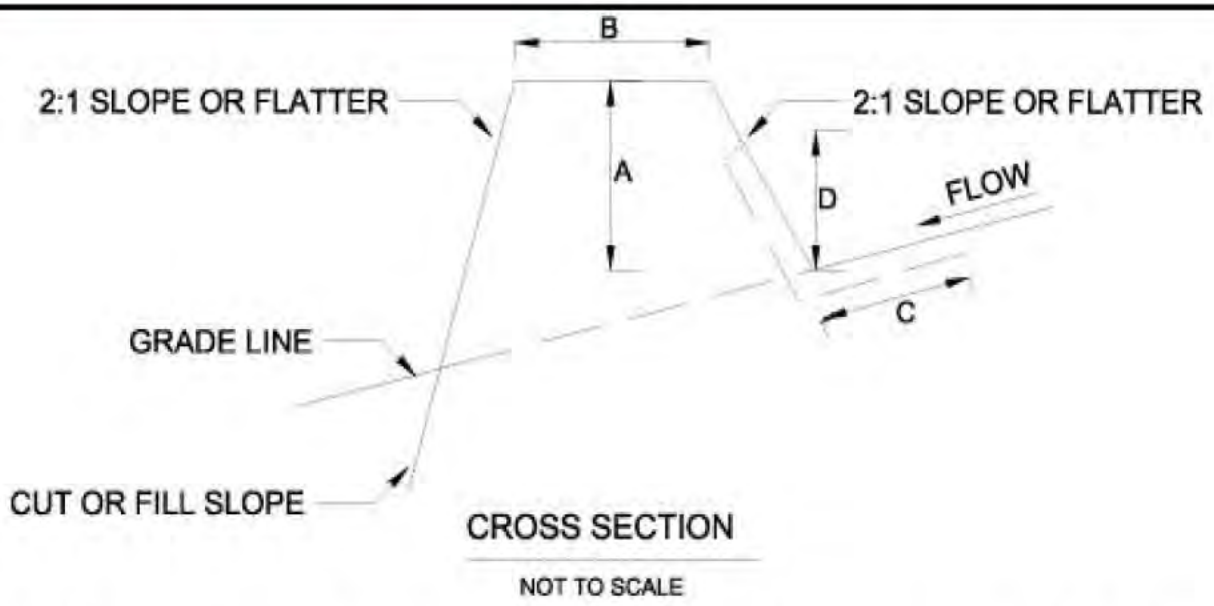
1. One or more acres of soil will be disturbed at any one time.
2. Average slope of the disturbed area is 20% or steeper.*

* See page 63 for slope calculations.



Berms and ditches divert upslope contributing runoff around construction sites and reduce erosion and sedimentation problems. Stabilize berms and ditches after construction.

Diversion Berm installation:



A - Berm Height: 1.5 feet
B - Berm Width: 2 feet
Side slopes: 2:1 (H:V) or flatter
C - Flow width: 4 feet
D - Flow depth: 8 inches

1. Construct berm to the minimum specification above.
2. Compact the berm with a shovel or earth-moving equipment.
3. Seed and mulch berm or cover with erosion control matting immediately after installation.
4. Stabilize the flow channel with seed and mulch or erosion control matting. Line the channel with 4 inch stone if the channel slope is greater than 20%.
5. Ensure the berm drains to an outlet stabilized with riprap. Ensure that there is no erosion at the outlet.

6. The diversion berm shall remain in place until the disturbed areas are completely stabilized.

Good construction, seeding, and stabilization of diversion berm. Note that diversion ditch is lined with grass on flatter part of slope, and with rock on steeper part.

7. Install Perimeter Controls

Purpose:

Silt Fence and Erosion Control Berms intercept runoff and allow suspended sediment to settle or filter out. Filter Socks and Straw Wattles also filter construction runoff and are acceptable for use in specific situations.

Silt Fence, Erosion Control Berms, Filter Socks and Straw Wattles are all acceptable perimeter controls based on site specific conditions. Permittee(s) must ensure the right practice is selected for erosion prevention and sediment control.

Requirements:

Perimeter controls must be installed:

- On the downhill side of the construction activities
- Between any ditch, swale, storm drain, or surface water and the disturbed soil
- Perimeter controls not labeled as biodegradable shall be removed once the drainage area has reached final stabilization

** Hay bales must not be used exclusively as sediment barriers due to their tendency to degrade and fall apart and may only be used in support of other required practices.*

How to Comply:

Select and install a perimeter control from the following options: Silt Fence, Erosion Control Berms, Filter Socks, or Straw Wattles.

Where to place:

- Place perimeter controls on the downhill side of disturbed soil. If space is available, place perimeter control 10 ft from the bottom of the slope, otherwise place along the contour at the bottom of the slope.
- Ensure the perimeter control catches all runoff from distrubed soil.
- Maximum drainage area is ¼ acre for 100 feet of silt fence and erosion control berm.
- Install perimeter controls across the slope (not up and down slope)
- Install multiple rows of perimeter control on long slopes to intercept flow.
- Do not install perimeter controls across ditches, channels, or streams.
- Maximum slope length (in feet) above a filter sock or straw wattle:

Slope (%)	Sock Diameter (in)			
	12"	18"	24"	32"
<5	225	250	275	325
5-10	125	150	200	275
10-20	65	70	130	150
20-25	50	55	100	120
25-33	40	45	60	75
>33	25	30	35	50

Slope	Straw Wattle (12")
<6:1	50
6:1-4:1	25
4:1-2:1	20
2:1-1:1	10
>1:1	5

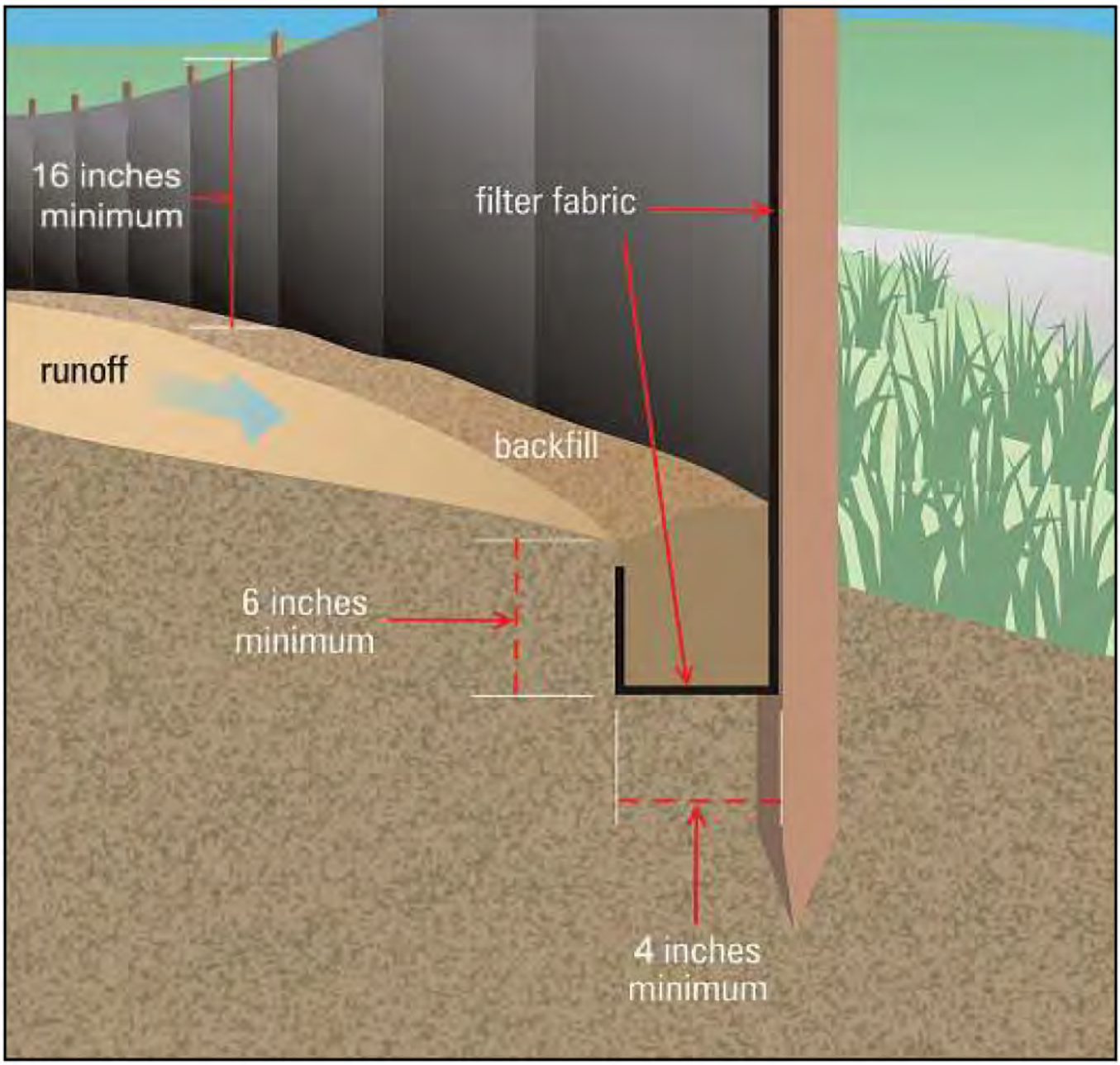
Perimeter Control Construction Specifications

Silt Fence

A temporary barrier of geotextile fabric installed on the contours across a project site to intercept sediment laden runoff from small drainage areas of disturbed soil.

Silt Fence Installation:

- Dig a trench 6 inches deep across the slope
- Unroll silt fence along the trench
- Ensure stakes are on the downhill side of the fence
- Join fencing by rolling the end stakes together
- Drive stakes in against downhill side of trench
- Drive stakes until 16 inches of fabric is in trench
- Push fabric into trench; spread along bottom
- Fill trench with soil and pack down
- Gravel can be used to create ground contact with filter fabric when bedrock, ledge, or nearby tree roots do not allow for trenching. (A secondary perimeter control can be effective in these locations as well.)



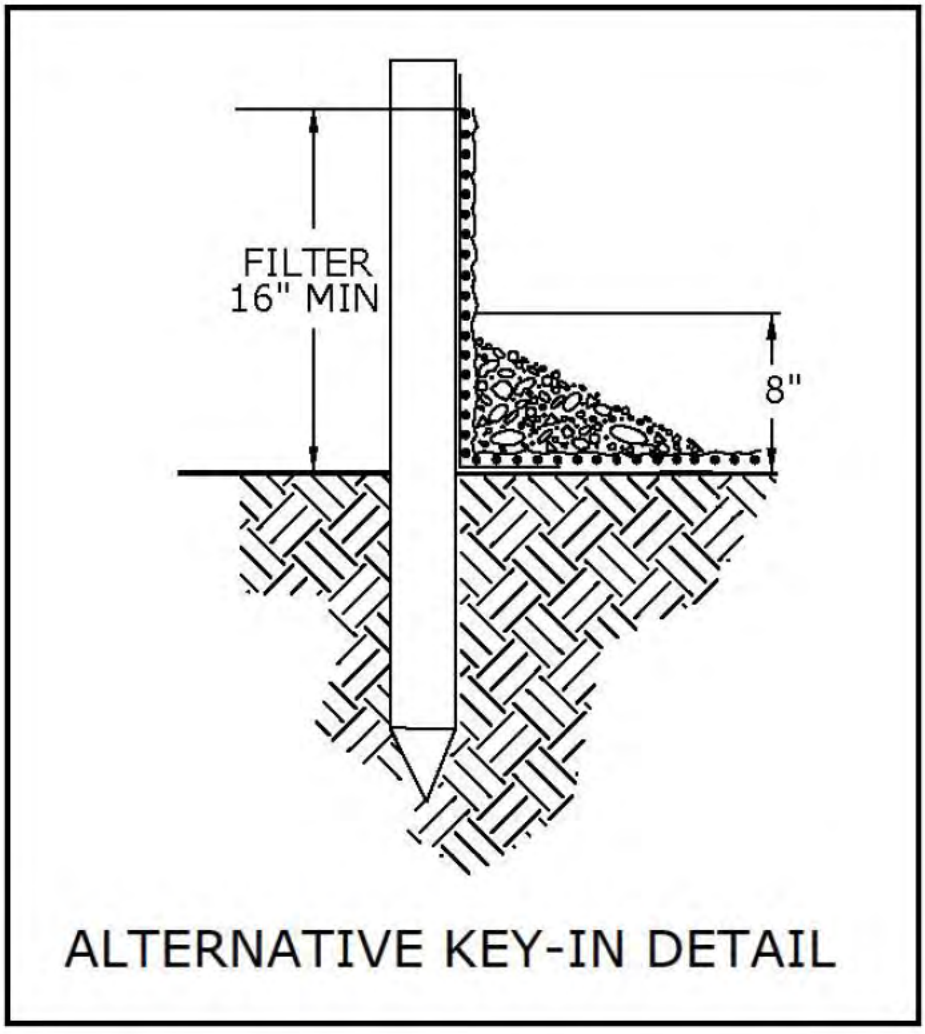
Silt Fence Maintenance:

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.
- Replace any silt fence that is torn, ripped, or otherwise damaged that is no longer effective.

Good use of J-hook in silt fence to trap sediment in water running along the fence. Sediment must be removed before it reaches halfway to top of fence.

Poor installation of silt fencing. Silt fence must be trenched in along bottom. Hay bales are not approved as sediment barriers.

Excellent installation of reinforced silt fence and j-hooks in front of a stone-lined drainage channel.



Erosion Control Berms

Erosion control berms are comprised of a dense mixture of intertwining wood fragments and grit that form a stable, long lasting mulch. Common sources include stump grindings, and aged wood waste.

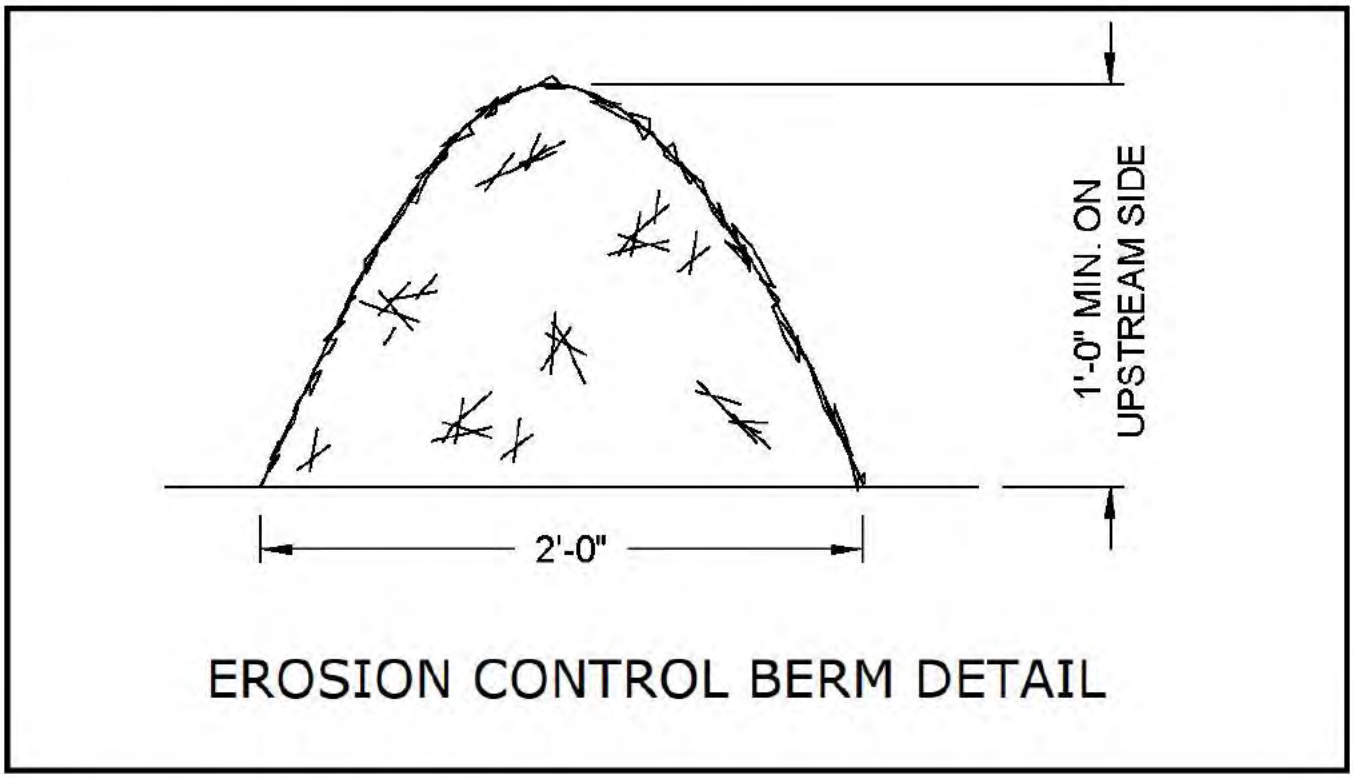
Erosion Control Berm Installation:

- Stump grindings from land clearing are an excellent source of material for erosion control berms, and may be readily produced when the area to be developed is forested.
- Erosion control berms are effective on frozen ground, rock outcrops, and forested areas with heavy root cover. It may be necessary to pack down or remove vegetation to prevent the creation of voids or bridges which will allow berm washout and pass sediment laden water offsite.
- The erosion control berm should be a minimum of 1 foot tall and 2 feet wide. On longer or steeper slopes a larger berm may be necessary.

Erosion Control Berm Maintenance:

- Erosion control berms must be redressed and reshaped as necessary to ensure that sediment doesn't accumulate more than halfway up the berm face.

The erosion control berm above is allowing for both ponding and filtering of stormwater.



EROSION CONTROL BERM DETAIL

Filter Socks

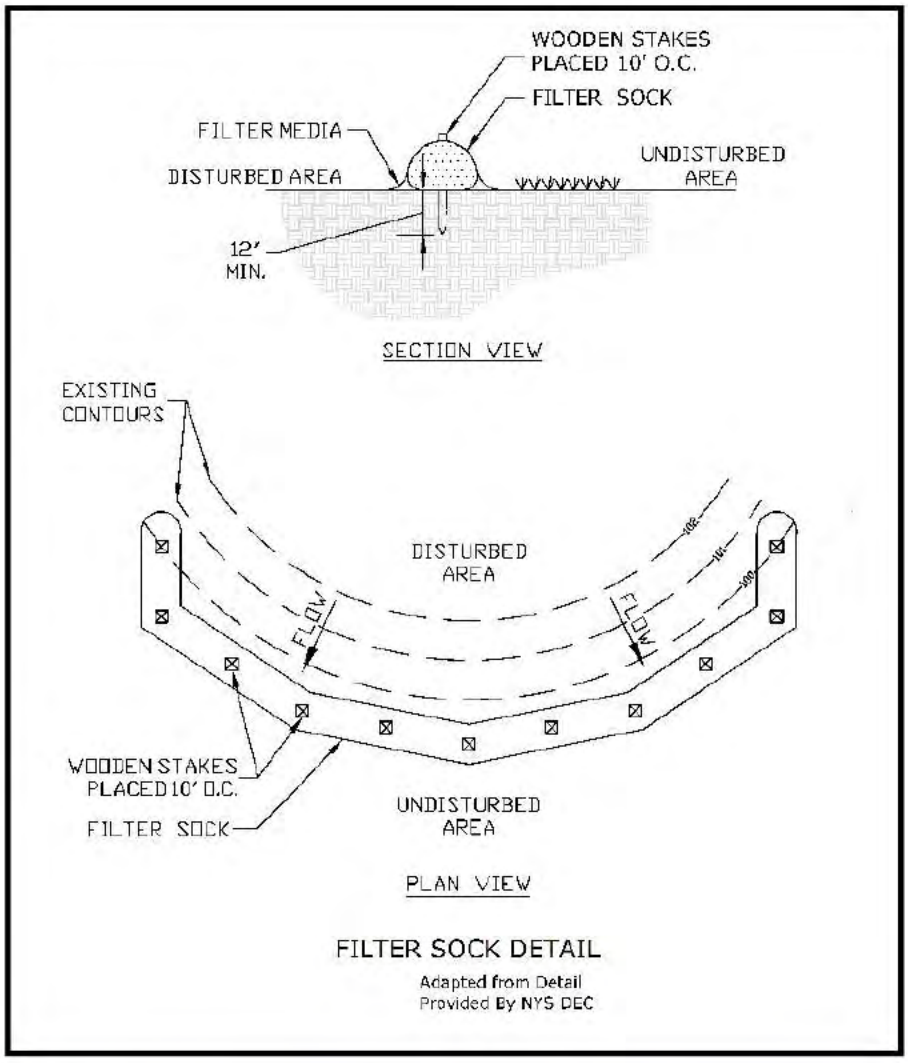
A manufactured tube made of either a synthetic material or an organic fiber which is filled with erosion control mix or other finely shredded organic material such as coconut fiber. They are an excellent practice for slowing runoff on long open slopes and for use around stockpiles.

Filter Sock Installation:

- Filter socks are best used for small areas of disturbance, at the base of stockpiles, across slope contours and across paved areas.
- Full contact with the ground is critical for filter socks to be effective and to prevent bypass. A trench 2”-3” deep shall be dug along the path of the filter sock, with the exception of installations across paved areas.
- Most applications will require staking at 10 ft intervals, which should help both keep the filter sock in place and push it downward for maximum contact with the ground.

Filter Sock Maintenance:

- Accumulated sediment should be removed and placed in an upland location when material reaches half of the filter sock height.
- Filter socks can be reshaped if they become flattened or caked in sediment.



Good use of filter socks along a slope to slow runoff velocity.

Straw Wattles

Straw wattles are similar to filter socks, but with less density due to straw filling material. These can be used in successive rows to slow sheet flow and collect sediment on long slopes or around the base of soil stock piles, but are not appropriate for application on impervious surfaces such as asphalt, concrete, or ledge.

Straw Wattle Installation:

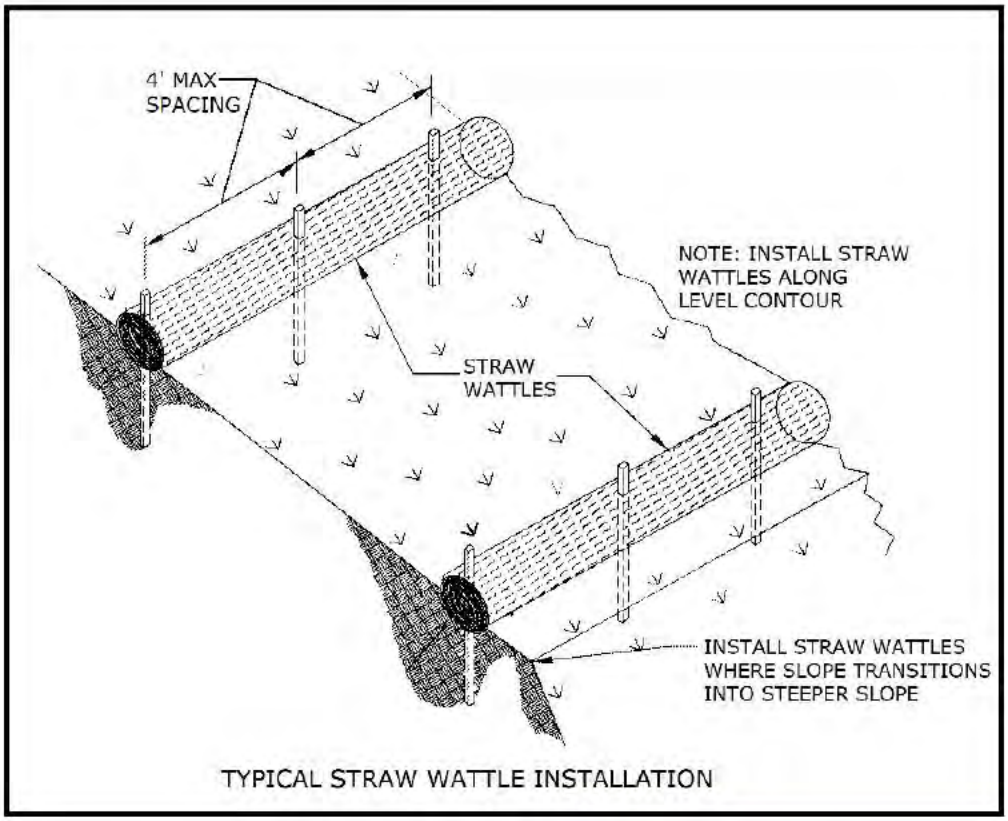
Straw Wattles are best used for small areas of disturbance, at the base of stockpiles,and across slope contours.

- Full contact with the ground is critical for straw wattles to be effective and to prevent short circuiting. A trench 2”-3” deep shall be dug along the path of the wattle.
- Straw wattles shall be secured with 18-24” stakes every 3-4’ and with a stake at each end. Stakes shall be driven through the middle of the wattle and perpendicular to slope, leaving at least 2-3” of stake extending above wattle. In limited cases, wattles may be secured without stakes by use of sandbags if staking is not feasible.
- Adjacent wattles shall tightly abut or overlap.

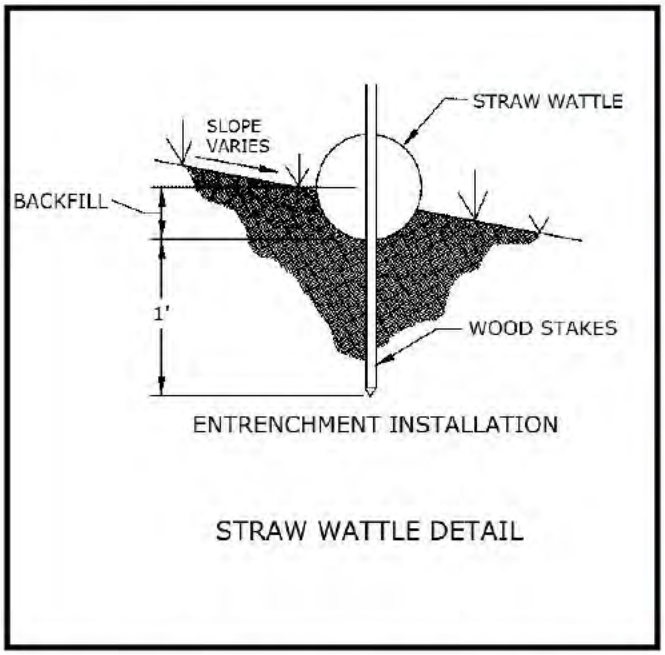
Straw Wattle Maintenance:

- Accumulated sediment should be removed and placed in an upland location.

- Straw wattles can be reshaped if they become flattened or caked in sediment.



TYPICAL STRAW WATTLE INSTALLATION



ENTRENCHMENT INSTALLATION

STRAW WATTLE DETAIL

Straw wattle properly staked in and providing settling of runoff from this shallow slope. Note a clean wattle was placed in front of an older less effective wattle.

8. Storm Inlet Protection

Purpose:

Existing or new storm inlets on construction sites constitute a site perimeter and must be protected from sediment laden runoff. The practices below allow stormwater to settle and filter through the practice and not bypass the inlet entirely.

Requirements:

Stormwater inlets shall be 4 inches above grade or an acceptable inlet control/protection should be installed.

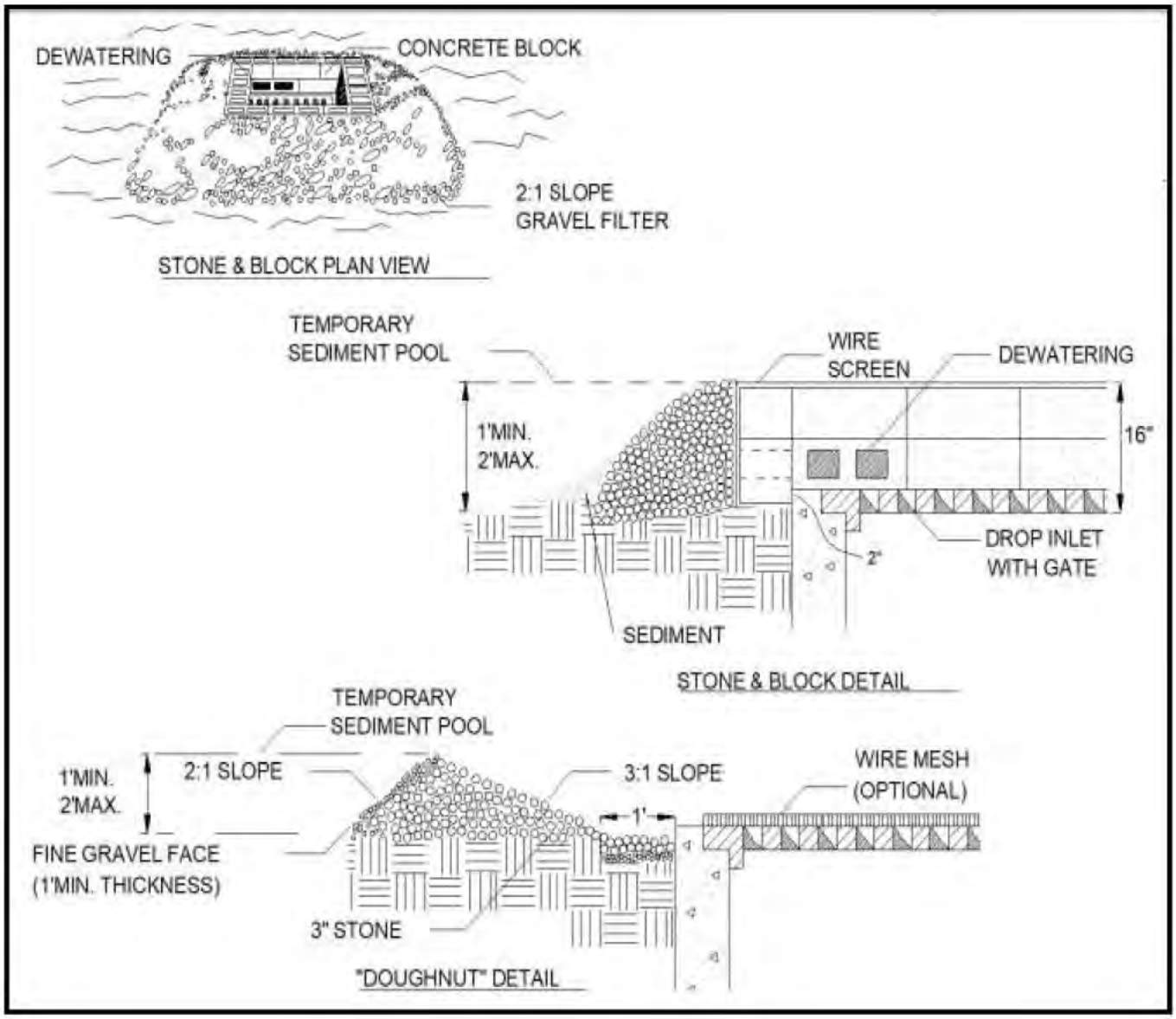
Inlet Protection Installation:

Proprietary Inlet Protection:

Shall provide for storage and removal of sediment and be sized appropriately for the drainage area, while allowing stormwater to filter through. These may be used if installed and maintained in accordance with the manufacturer's specifications.

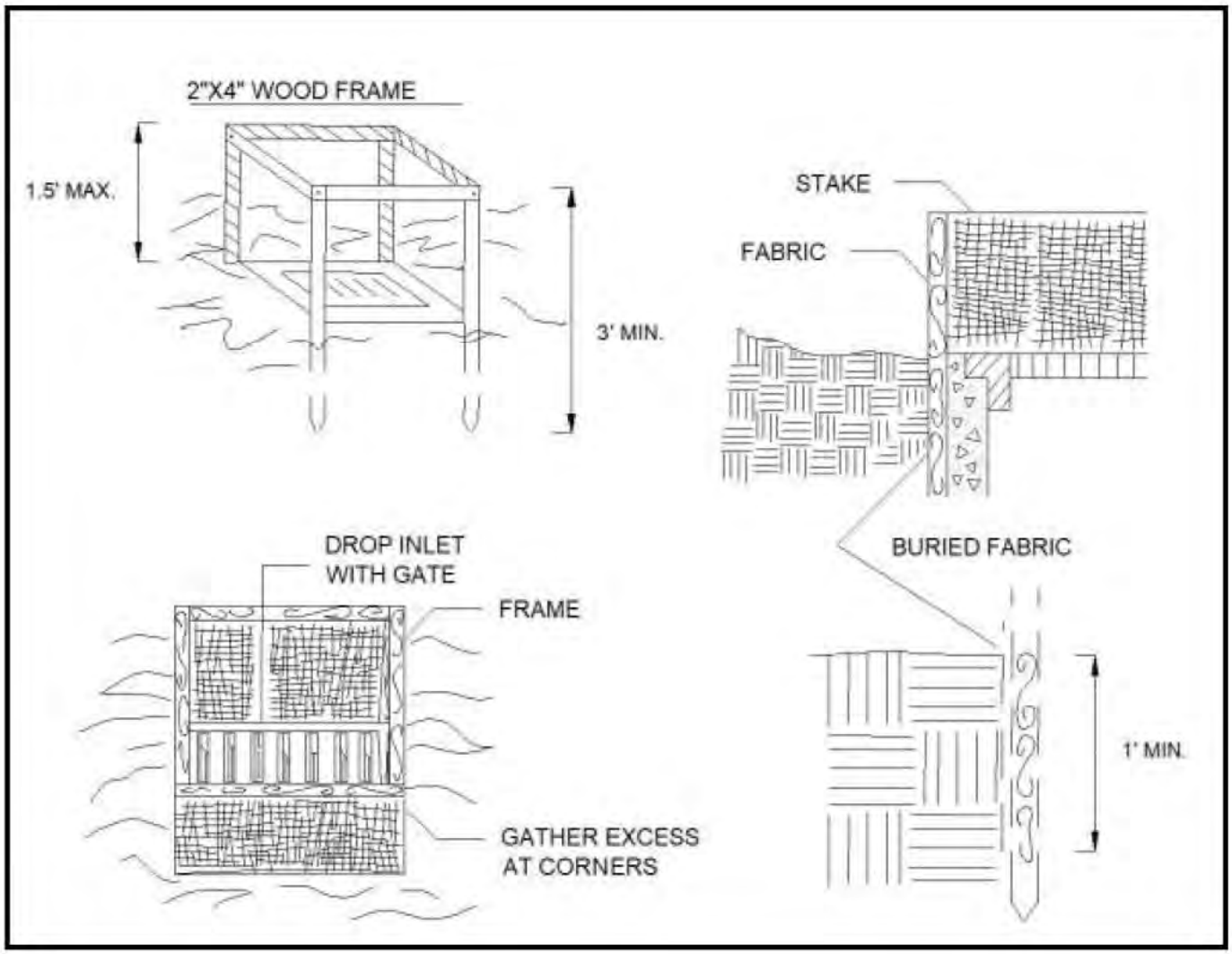
Stone and Block Inlet Protection:

Concrete blocks placed around an inlet with a circle of filtering stone sloped against the blocks.


DEWATERING
CONCRETE BLOCK
2:1 SLOPE
GRAVEL FILTER
STONE & BLOCK PLAN VIEW
TEMPORARY
SEDIMENT POOL
WIRE
SCREEN
DEWATERING
1'MIN.
2'MAX.
16"
2"
DROP INLET
WITH GATE
SEDIMENT
STONE & BLOCK DETAIL
TEMPORARY
SEDIMENT POOL
1'MIN.
2'MAX.
2:1 SLOPE
3:1 SLOPE
WIRE MESH
(OPTIONAL)
1'
FINE GRAVEL FACE
(1'MIN. THICKNESS)
3" STONE
"DOUGHNUT" DETAIL

Filter Fabric and Stone Inlet Protection:

Vertical filter fabric installed around drop inlet with stone around fabric for stormwater filtering and creating ground contact with filter fabric. Alternatively, fabric may be buried below ground.



Use of stone inlet protection with the incorporation of a straw wattle in place of cinder blocks for the stone and block specification.

9. Water Bars

Purpose:

Some sites may benefit from the use of water bars on the construction site. When installed these may capture and redirect runoff to a stable low gradient location. Water bars limit the erosive velocity of water by diverting surface runoff at pre-designed intervals.

Requirements:

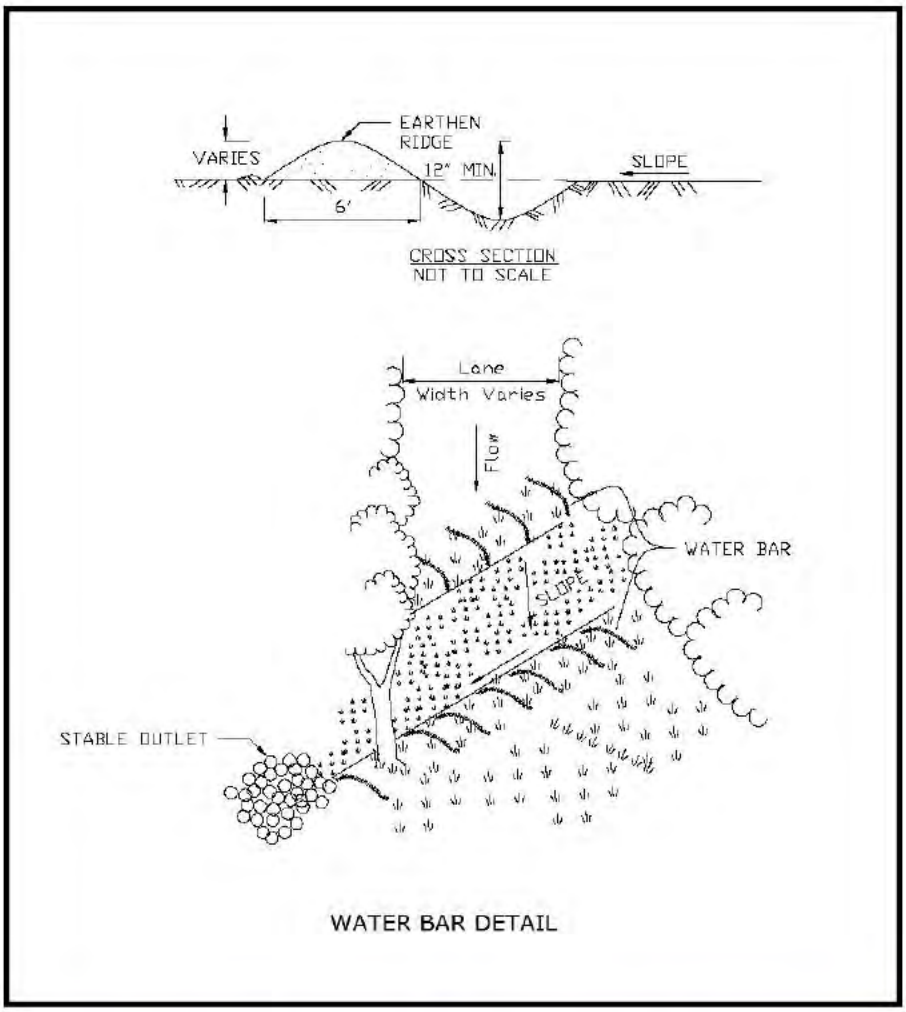
These can be constructed per the following detail, with side slopes no steeper than 4:1 where vehicles cross with a minimum design height of 12 inches, measured from channel bottom to ridge top.

Water Bar installation:

Water bars should have stable outlets, either natural or constructed. The spacing should follow Table 1.

Table 1. Water Bar Spacing

Slope (%)	Distance between structures (ft)
< 5	125
5 - 10	100
10 - 20	75
20 - 35	50
> 35	25



WATER BAR DETAIL

Good installation of a water bar along an access road.

10. Slow Down Channelized Runoff

Purpose:

Stone check dams reduce erosion in drainage channels by slowing down the stormwater flow.

Requirements:

If there is a concentrated flow (e.g. in a ditch or channel) of stormwater on your site, then you are required to install stone check dams. Hay bales and silt fence must not be used as check dams.

Check Dam installation:

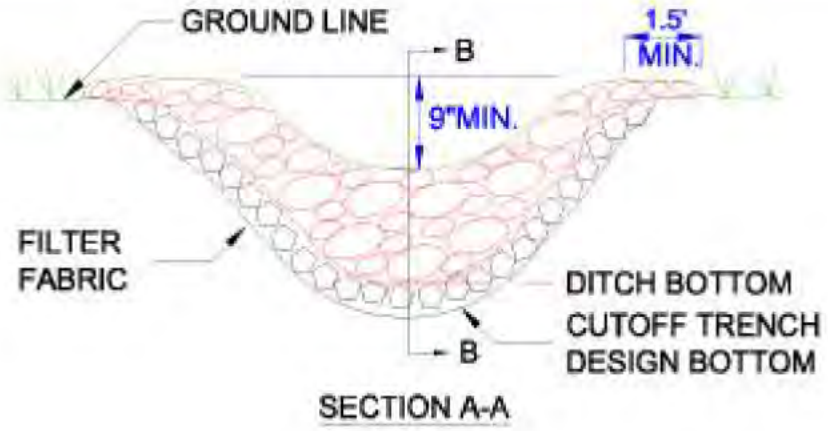
- **Height:** No greater than 2 feet. Center of dam should be 9 inches lower than the side elevation
- **Side slopes:** 2:1 or flatter (see p.63 for slope calculation)
- **Stone size:** Use a mixture of 2 to 9 inch stone; the larger stone should act as armoring, while the smaller stone helps to filter the channelized runoff. The small stone should be placed primarily in the interior of the check dam and the large stone should be placed in an armoring layer on the outside.
- **Width:** Dams should span the width of the channel and extend up the sides of the banks

- **Spacing:** Space the dams so that the bottom (toe) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

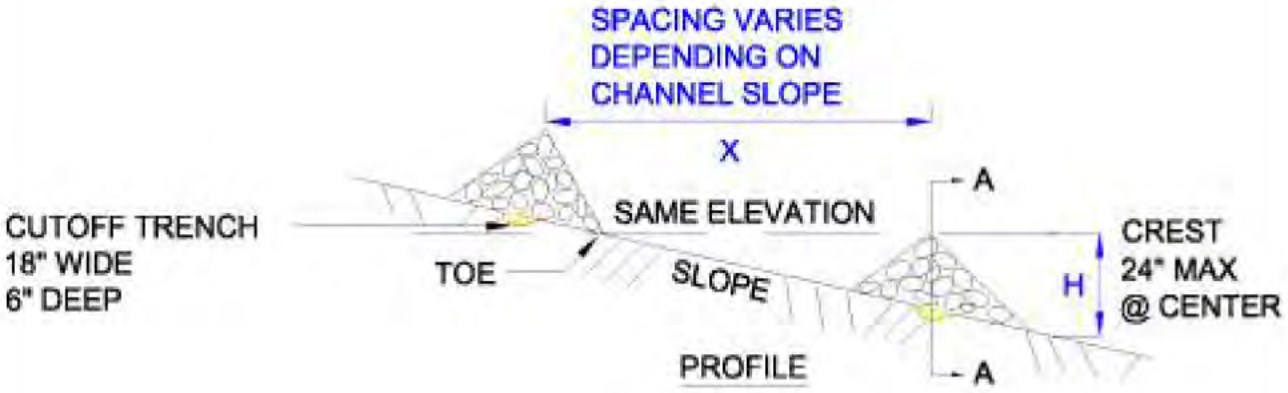
$$\text{Spacing (in feet)} = \frac{\text{Height of check dam (in feet)}}{\text{Slope in channel (ft/ft)}}$$

Check Dam Maintenance:

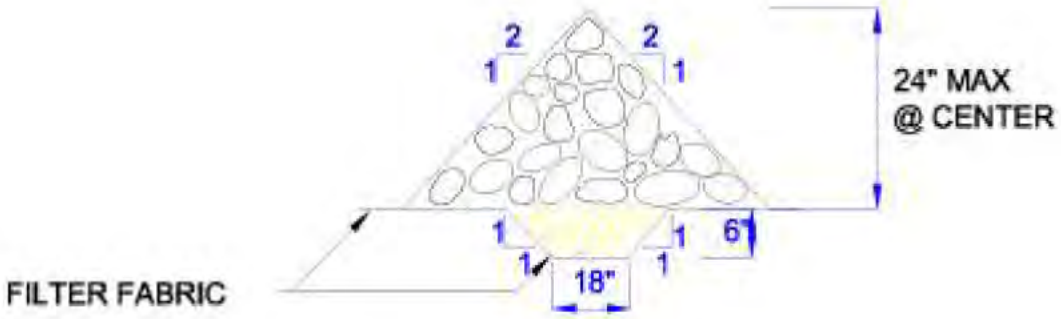
- Correct all observed damage immediately after every runoff event.
- Remove all sediment accumulated behind the check dams and dispose of in an upland location.
- If significant erosion is observed between check dams, the channel shall be stone lined.



SECTION A-A



PROFILE



SECTION B-B

Good installation of rock check dams. The check dams should extend up the sides of the banks. Middle section should be lower than the sides. Clean out sediment as it accumulates.

Hay bales must not be used as check dams due to their high failure rates.

Rock Outlet Protection:

- Waterways or outlets with concentrated stormwater runoff shall be stabilized with riprap, proprietary stabilization product or permanent material. This additional stabilization is applicable in areas where the channel slope and velocity or soil type require additional stabilization.
- All outlets from concentrated stormwater flows will require a stabilized bed.
- Stone shall be sized so it is not mobilized during high flows.

The images on page 44 show the before and after of an eroding channel from a culvert outlet, stabilized with stone, to a small pool for energy dissipation at the bottom of the slope.

Before installing rock outlet protection

After installing rock outlet protection

11. Slope Stabilization

Purpose:

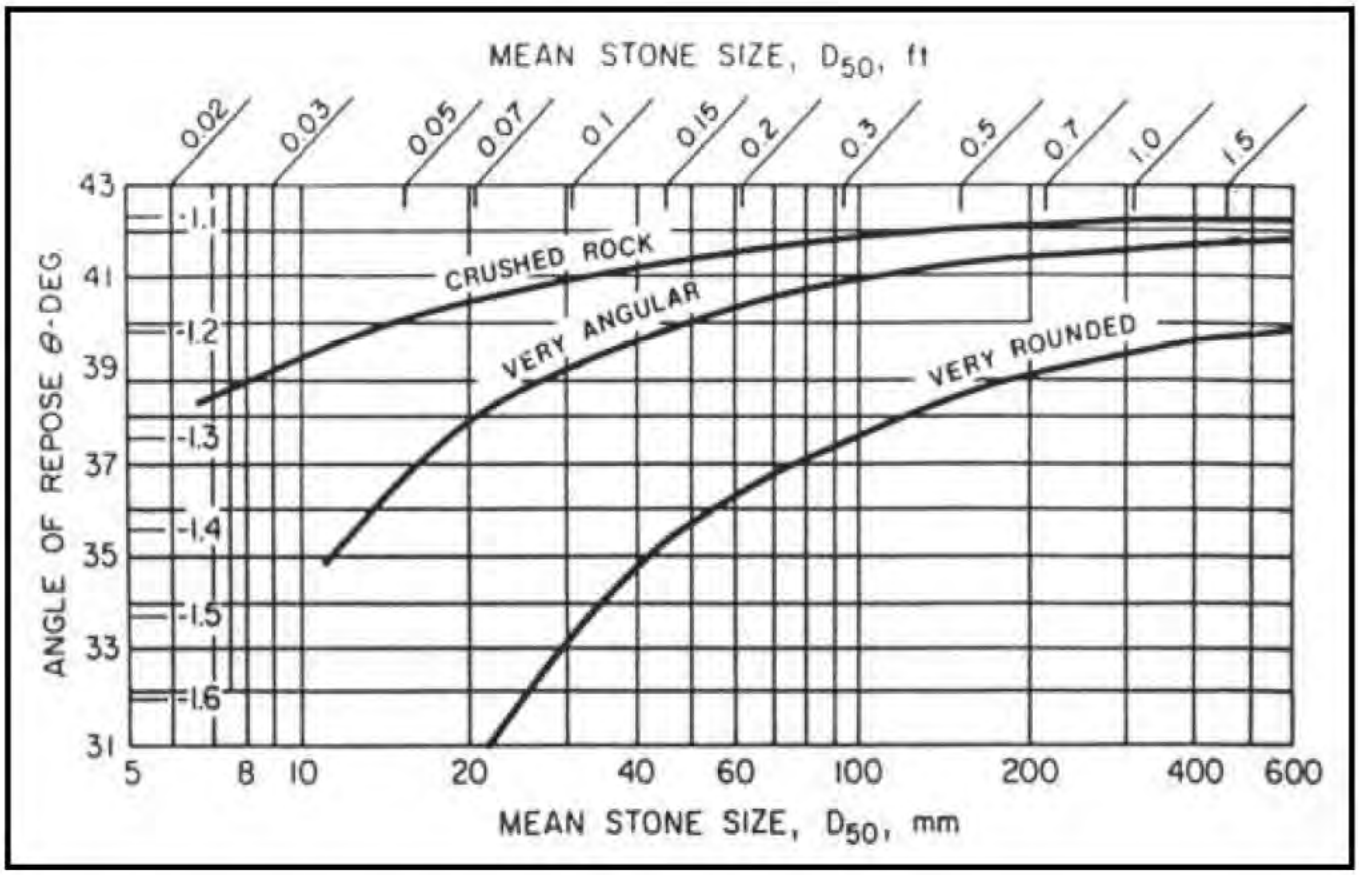
Surface covering designed to protect and stabilize an area prone to erosion where seeding and mulching may be inadequate, generally slopes 3:1 or greater. The erosion potential may be due solely to slope angle; however, a more gradual slope and poor soil structure can also require additional stabilization.

Requirements for Temporary Stabilization:

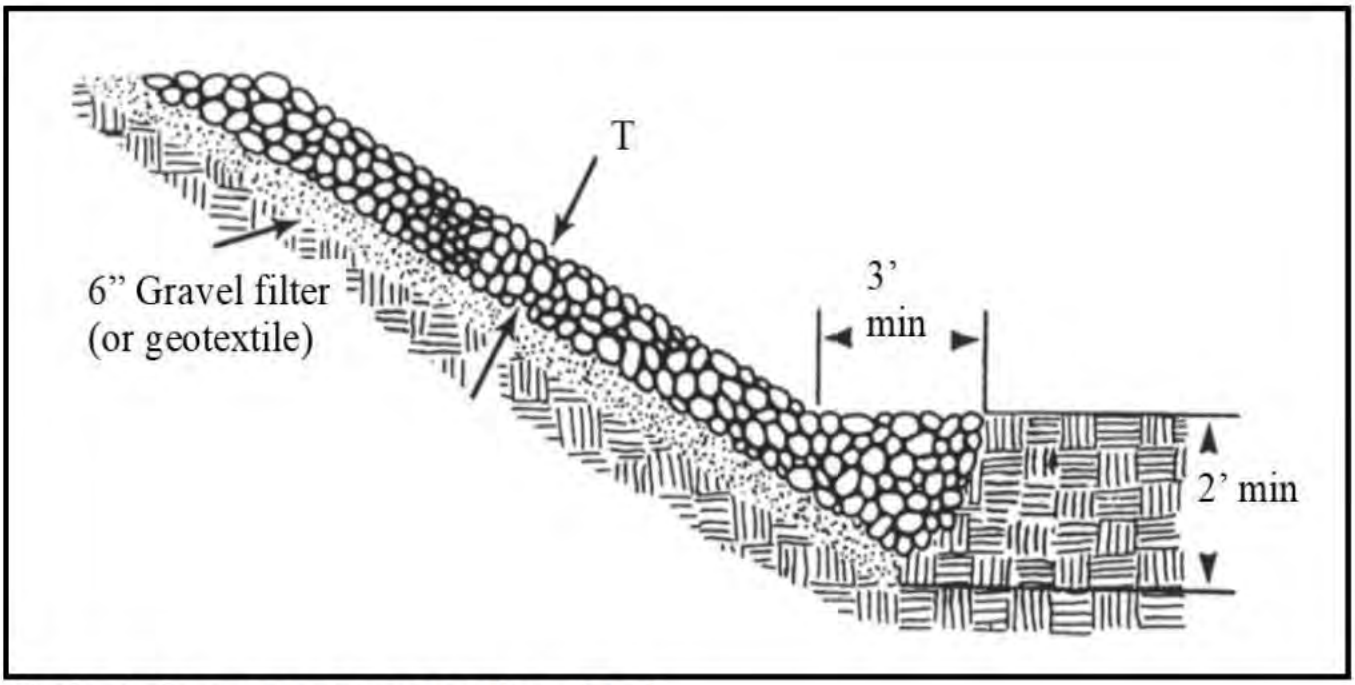
Use of one of the listed slope protection practices below on slopes 3:1 and greater or as needed on flatter slopes based on soil type.

Riprap: A layer of stone designed to protect and stabilize areas subject to erosion.

Stone rip-rap installed on an unstable slope with a stormwater outlet pipe along the slope.



Angle of repose of riprap stones (FHWA)



Typical riprap slope protection detal

Rolled Erosion Control Product:

A preformed protective blanket of straw or other plant residue, formed into a mat, with a supporting mesh framework on one or both sides. This mesh cannot be made of a material with welded joints.

Install blankets and mats vertically on long slopes. Unroll from top of hill and staple as you unroll it. Do not stretch blankets.

Erosion Control Matting:

Install per manufacturer's instructions.

Excellent stabilization of large slopes to limit the area of disturbance. Make sure to install erosion control matting within 48 hours of grading to ensure good contact between soil and mat.

IMPORTANT NOTE:

Rolled Erosion Control Product (RECP) materials have the potential to ensnare animals such as snakes and birds, which can lead to injury or fatality. This has been observed to be most problematic in products with a plastic mesh, whether biodegradable or not.

Accordingly, only woven and interlinked products are approved for use in RECP applications.

(See Tables 4.3 and 4.4 of the Vermont Standards & Specifications for Erosion Prevention and Sediment Control)

12. Winter Construction Requirements October 15 - April 15

Purpose:

'Winter construction' as discussed here, describes the period from October 15 through April 15, when erosion prevention and sediment control is significantly more difficult. There are specific requirements for sites that conduct earth disturbance during the defined Winter Construction Period and for sites where disturbed areas have not reached final stabilization by October 15.

Rains in late fall, thaws throughout the winter, and spring melt and rains can produce significant flows over frozen and saturated ground, greatly increasing the potential for erosion. A construction site can be managed to anticipate these conditions to prevent erosion and thus minimize the risk to water quality during this time period.

Requirements for Winter Shutdown:

For projects or areas of a site that will have completed earth disturbance activities prior to the winter construction period (October 15 through April 15), the following requirements must be adhered to:

1. For areas to be stabilized for the winter through the establishment of vegetation, seeding and mulching shall be completed no later than September 15 to ensure adequate growth and cover before the start of the winter period.

Stabilization and seeding of slopes before winter will reduce or eliminate erosion in the spring.

2. If seeding is not completed by September 15, additional non-vegetative protection must be used to stabilize the site for the winter period. Areas of disturbance not seeded and mulched by September 15 are required to temporarily stabilize by one of the following methods:

- Implement Rolled Erosion Control Products (i.e. matting) over the areas of earth disturbance.
- Apply a 2" mulch layer to areas of earth disturbance, equivalent to double the standard rate. Mulch should be tracked in open areas vulnerable to wind.
- Seeding with winter rye is recommended to allow for early germination during wet spring conditions.

Requirements for Winter Construction

If construction activities involving earth disturbance continue into the winter construction period, the following requirements apply:

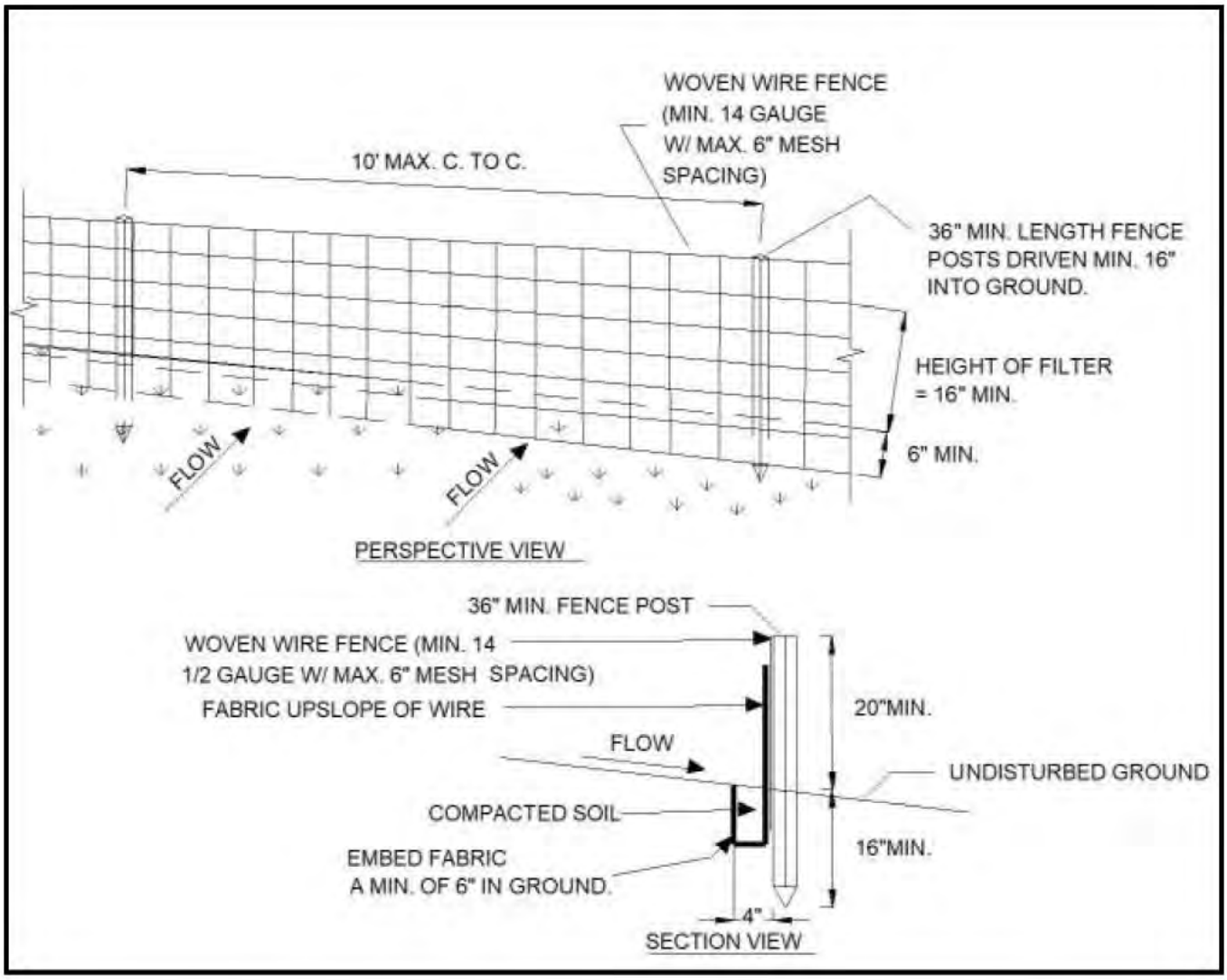
1. Enlarged access points, stabilized to provide for snow stockpiling.
2. Snow shall be managed with adequate storage and control of meltwater, requiring cleared snow to be stored down slope of all areas of disturbance and out of stormwater treatment structures.

3. For areas of disturbance within 100 ft of a waterbody, the following must be installed across the slope, down gradient of the earth disturbance:

   - a combination of one practice from group A placed in front of a practice from group B, or
   - two group B practices, or
   - a single row of Reinforced Silt Fence

Group A	Group B
Filter Socks	Silt Fence
Straw Wattles	Erosion Control Berms

Use of a combination of silt fence and filter sock in place of reinforced silt fence for winter construction perimeter control requirements in proximity to a water resource area.



4. Drainage structures must be kept open and free of snow and ice dams.

5. Silt fence and other practices requiring earth disturbance must be installed ahead of frozen ground.

6. Mulch used for temporary stabilization must be applied at a minimum of 2 inches with an 80-90% cover.

7. To ensure cover of disturbed soil in advance of a precipitation or melt event, areas of disturbed soil must be stabilized prior to any runoff producing event.
    - Stabilization is not required if the work is occuring in a self-contained excavation (i.e. no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation, utility trenches), provided any dewatering, if necessary, is conducted in accordance with Part 13.

8. Prior to stabilization, snow or ice must be removed to the extent practicable.

9. Use stone to stabilize areas such as the perimeter of buildings under construction or where construction vehicle traffic is anticipated. Stone paths should be sufficient width to accommodate vehicle or equipment traffic.

13. Dewatering Activities

Purpose:

To minimize and prevent discharges of sediment as a result of dewatering activities.

Requirements:

Stormwater and groundwater from dewatering activities shall be uncontaminated and shall be filtered or passed through a sediment trapping device, or both, and routed in a manner that does not result in visually turbid discharges to waters. Pump intake for dewatering must be at or near the surface of the ponding area to prevent disturbance of the settled material. Visually turbid water must not be pumped directly to storm drains or other conveyance that leads to waters without implementing one or more of the practices described below.

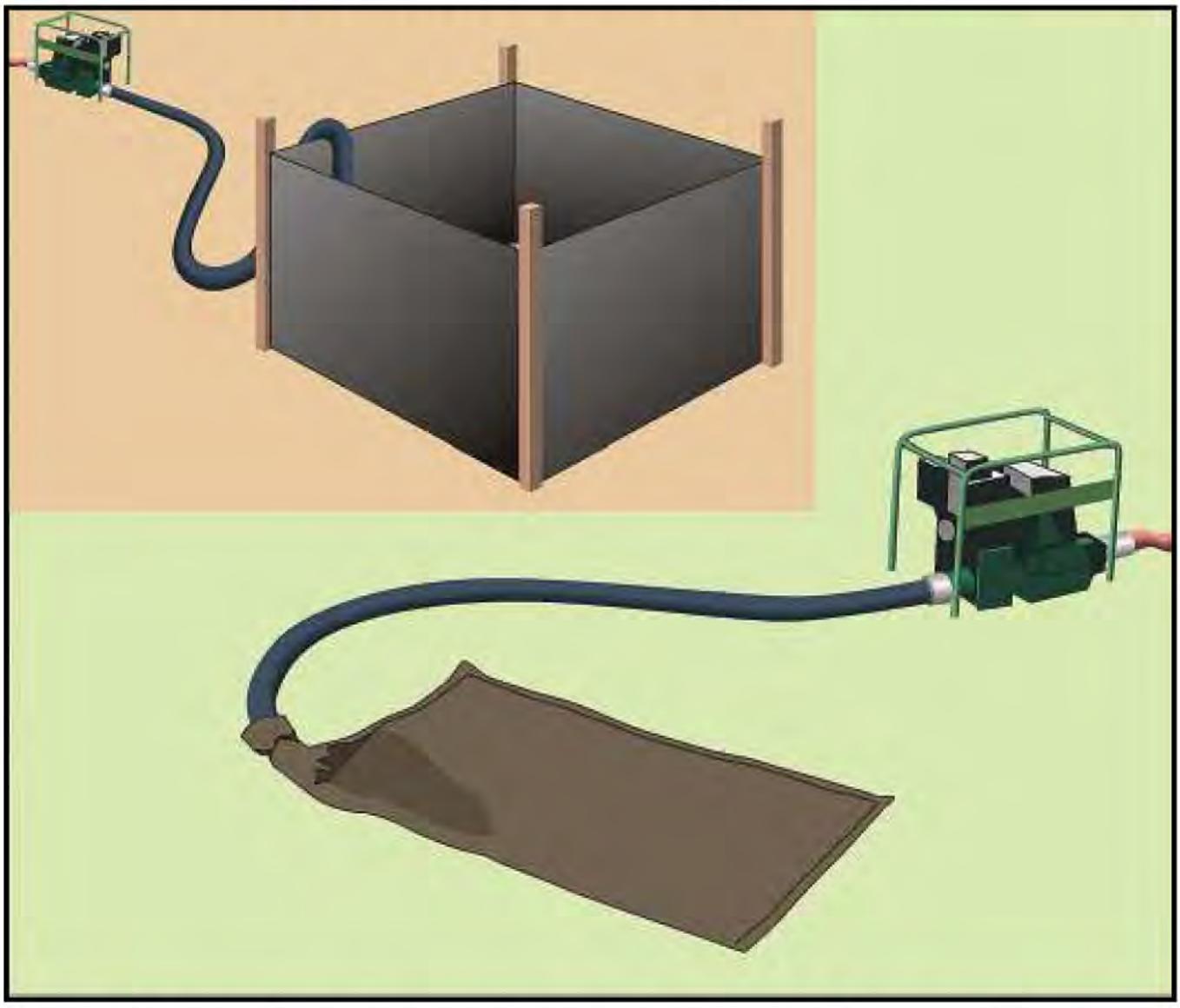
How to comply:

Implement one or more of the following practices when dewatering:

- Implement sock filters or sediment filter bags on dewatering pump discharge hoses or pipes.
- Route dewatering pump into silt fence enclosures or into staked hay bale enclosures lined with fabric.

- Route dewatering pump to vegetated area at least 50 feet from surface waters and at a slope no greater than 5%.

Remove accumulated sediment after the water has dispersed or infiltrated and stabilize the area with seed and mulch as necessary. A sufficient area of vegetation greatly improves the efficacy of filtering/settling of turbid water discharged from a dewatering enclosure.



Water is pumped from the construction site into a silt fence enclosure on a vegetated area or into a sock filter away from waterways.

14. Concrete Washout

Purpose:

Concrete wash water often contains a slurry of heavy metals, can be caustic, and has a high pH. As a result, concrete washwater is not a permitted discharge.

Requirements:

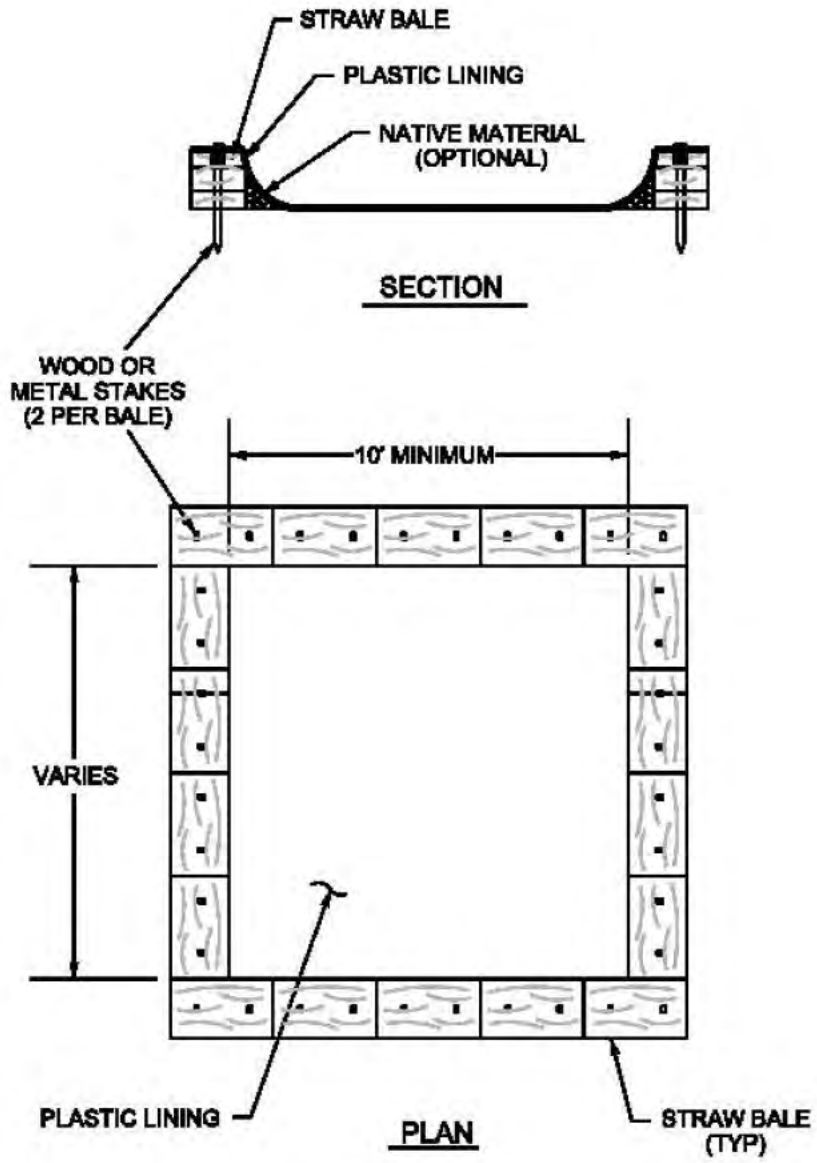
Concrete washwater and excess washout concrete should go in a lined washout. This washout should be accessible to the cement truck and at least 50 feet away from stormwater inlets and surface water.

Concrete Washout Installation:

If cement washout is going to occur on site, a lined concrete washout as shown below shall be used onsite. Care should be given to assure that the washout does not overtop during a storm event. Proprietary lined and contained concrete washout basins may also be utilized in accordance with manufacturer's specifications.

Concrete Washout Maintenance:

Concrete washout shall be pumped to a concrete truck as necessary, for disposal or reuse at a batch plant. Washout may also be allowed to evaporate/harden for disposal in accordance with all applicable local, state, and federal regulations.



ABOVE GRADE STRAW BALE
CONCRETE WASHOUT DETAIL

15. Permanent Controls

Permanent stormwater treatment practices are constructed to maintain water quality, preserve existing water table elevations, prevent downstream flooding, and are often required for a project under a Vermont operational stormwater discharge permit applicable to the construction or redevelopment of impervious surfaces.*

Permanent Stormwater Treatment Practices (STPs) include infiltration and filtering practices as well as detention ponds and treatment wetlands. **It is critical that infiltration practices do not receive runoff until the site area has reached final stabilization.**

The outlet of permanent controls that are used as temporary storage and sediment basins during construction constitutes a potential discharge point and therefore must be managed to minimize and prevent sediment laden stormwater discharges. These practices will often need to be reshaped to meet the operational design criteria for volumes, grades and geometry once final grading and stabilization has occurred.

*An impervious surface is a manmade surface, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

Infiltrating stormwater practices such as this bioretention system should be kept offline until the drainage area has been fully stabilized.

Install all permanent stormwater treatment practices before constructing any impervious surfaces on site. This stormwater wetland treats stormwater runoff from the adjacent parking lot.

16. Inspection, Maintenance, and Discharge Reporting

Site inspections are required to ensure that all erosion prevention and sediment control practices are sufficient and functioning properly. Regular inspections and maintenance of practices will help to reduce costly repairs and minimize the risk to water quality from construction stormwater discharges.

Requirements:

Inspect the site at least once every 7 days and after every rainfall or snowmelt that results in stormwater runoff. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.

In the event of a visibly turbid discharge from the construction site, you must take immediate action to inspect and maintain existing erosion prevention and sediment control practices. Additional erosion prevention and sediment control measures must be installed as necessary, including temporary stabilization, to minimize and prevent the discharge of sediment laden stormwater runoff.

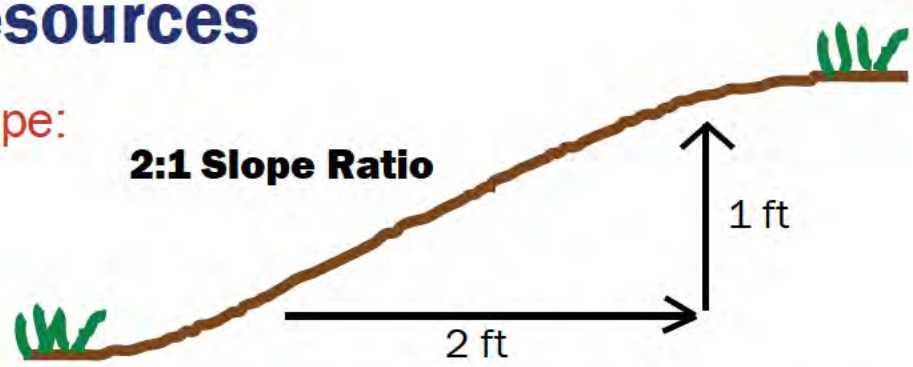
If after maintaining and supplementing BMPs, a discharge of visibly discolored stormwater from the construction site to surface waters continues, the permittee is required to notify DEC within 24 hours.

While documentation of a routine inspection is not required, example inspection forms and forms for required discharge reporting are available at the Stormwater Program website. Permittees shall review Construction General Permit 3-9020 for all discharge reporting requirements.

- A copy of the Low Risk Site Handbook shall be kept on-site.
- Daily inspections are required from October 15 through April 15.

Section 3
Additional Resources

How to calculate slope:



Approximate Slope Conversions			
Steepness	**Percent**	**Slope ratio (ft/ft)**	**Degrees**
Very steep	100%	1:1	45°
	50%	2:1	27°
Moderate	33%	3:1	18°
	25%	4:1	14°
Slight	10%	10:1	6°
	5%	20:1	3°

How to estimate disturbance area:

1 acre = 43,560 square feet = 4,840 square yards

Area in acres (width in feet x length in feet)						
(w) **x** *(l)*	100	150	200	300	400	500
100	0.2	0.3	0.5	0.7	0.9	1.1
150	0.3	0.5	0.7	1.0	1.4	1.7
200	0.5	0.7	0.9	1.4	1.8	2.3
300	0.7	1.0	1.4	2.1	2.8	3.4
400	0.9	1.4	1.8	2.8	3.7	4.6
500	1.1	1.7	2.3	3.4	4.6	5.7

Acknowledgements

Some design details and standards were adopted from those provided by: Vermont Electric Power Company (VELCO), TRC Solutions, Connecticut Department of Transportation (CTDOT) and the New York Department of Environmental Conservation (NYDEC).

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Randolph Davis Solar LLC for a certificate of public good pursuant to 30 V.S.A. §§ 248 and 8010, authorizing installation and operation of a 500 kW (AC) photovoltaic group net-metering system in Randolph, Vermont	)))))	Case No. 21-2939-NMP

REBUTTAL TESTIMONY OF SCOTT W. HOMSTED ON BEHALF OF PETITIONER

June 24, 2022

Mr. Homsted rebuts the direct prefiled testimony of Michael Binder and Joan Allen regarding the Randolph Davis Solar Project's potential erosion and stormwater impacts.

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REBUTTAL PREFILED TESTIMONY OF
SCOTT W. HOMSTED, P.E.
ON BEHALF OF PETITIONER

1. Introduction

Q1. Please state your name, occupation, and business address.

A1. My name is Scott W. Homsted. I am the Vice President of Krebs and Lansing Consulting Engineers, Inc. ("K&L"), State of Vermont Professional Engineer #7893. My business address is 164 Main Street, Suite 201, Colchester, Vermont 05446.

I received a B.S. in Civil Engineering from the University of Vermont in 1995. In 1995, I joined Krebs and Lansing Consulting Engineers, Inc. In 2007, I became an owner of K&L. As Vice President, I perform extensive work in civil engineering design, permitting, and construction services for many commercial, industrial, residential, and institutional civil site design projects. These projects include the design of roads, construction access roads, utility systems, storm control and treatment systems, on site sanitary sewer systems, municipal sanitary sewer, domestic water supply, municipal water supply systems, mass earthworks, grading, and erosion control measures. A copy of my resume is included as Exhibit RDS SWH-1.

Q2. What is the purpose of your rebuttal prefiled testimony?

A2. My rebuttal testimony rebuts the direct prefiled testimony of Michael Binder and Joan Allen regarding the Randolph Davis Solar Project's ("Project") potential erosion and stormwater impacts.

Q3. Please explain what work you and your firm have conducted in connection with the Project.

A3. We have worked with the Petitioner to develop the site plan, elevation drawing and civil engineering details for the Project. For the initial Project Site Plan and Elevation Drawings, Exhibits RDS MS-2 and -3, respectively, we used information provided by the design team (engineering, electrical, environmental), to assemble the plans for the initial filing. Subsequent to this filing, Horizons Engineering conducted an onsite topographic survey of the array area. Using the "on the ground" detailed survey prepared by Horizons Engineering, we prepared a revised solar array layout that avoids slopes of greater than 25%. As part of the revised site plan, we prepared the erosion prevention and sediment control ("EPSC") design and details necessary for the construction of the Project. Sheet C-103 of Exhibit RDS MS-2 incudes the extensive variety of EPSC measure options available to be employed throughout the Project area during construction to prevent erosion and keep sediment from leaving the site and reaching receiving waters. These measures include perimeter controls such as silt fence and Silt Soxx. These practices will be installed downslope of all disturbed areas to prevent sediment from leaving the site. A stabilized construction entrance and gravel staging area will prevent construction vehicles from tracking sediment onto adjacent roads. Various mulching materials and rates will be used to limit the amount of concurrent ground disturbance at any one time, and to provide

temporary ground stabilization while vegetation is established. These practices conform with the Vermont regulatory standards for erosion prevention and sediment control, which I discuss in more detail in A4, below.

Q4. Please describe the applicable standards that apply in Vermont to address erosion prevention and sediment control for this Project.

A4. The applicable regulations and standards include the Department of Environmental Conservation ("DEC") Construction General Permit ("CGP") 3-9020, issued February 19, 2020, effective May 19, 2020, and the Vermont Low Risk Handbook for Erosion Prevention and Sediment Control dated February, 2020. Construction General Permit 3-9020 authorizes permittees to discharge stormwater runoff from construction activities provided the project is in compliance with the requirements of the permit. The permitting requirements for projects authorized under this general permit depend upon the risk of having a discharge of stormwater from the construction site. There are two risk categories authorized by the general permit: Low Risk and Moderate Risk. Projects that pose a higher risk are ineligible to use the general permit and must file an application for an Individual Permit.

To determine the risk category for a proposed project, applicants must complete Appendix A of the permit. Appendix A is a risk evaluation procedure to determine the risk category for a project.

Q5. Does the Project qualify as a Low Risk or Moderate Risk construction project under the Vermont standards?

A5. The Project qualifies as a Low Risk project.

2. <u>Rebuttal Testimony</u>

Q6. Answer 12 of Mr. Binder's prefiled testimony addresses his assessment of the slopes within the limit of disturbance for the Project. Do you agree with his testimony and the exhibits he references in Answer 12?

A6. No. The Exhibit MB-24, ANR Slopes Map, is a map compiled from aerial imagery and is meant to provide a gross representation of where steep slopes may exist. For this Project Horizons Engineering has prepared a detailed "on the ground survey" that in conjunction with a computerized digital elevation model gives a more accurate assessment of where steep slopes exist in the area of the array. The solar array has been reconfigured to avoid steep slopes as shown on the current Site Plan. Exhibit MB-7 shows an older version of the Site Plan which does not account for the redesign to avoid steep slopes. Exhibit MB-8 shows steep slopes in the areas of the access road. We do not dispute the existence of steep slopes in this area. However, even with these slopes the Project still scores "Low Risk" in terms of State of Vermont Construction General Permit 3-9020. The EPSC measures to be employed at the Project site per Sheet C-103 of Exhibit RDS MS-2, which are have been approved on many projects by the DEC, will avoid undue erosion and stormwater impacts.

Q7. Answers 41 and 42 of Mr. Binder's testimony question how Krebs and Lansing prepared the Project Site Plan without having conducted a site visit. Can you please respond?

A7. A site visit was not necessary. Multiple members of the design team, including Norwich Solar, Arrowwood Environmental, and Horizons Engineering conducted site visits prior to and during the design phase of the project. Information from these site visits was incorporated into the base plans and mapping we used to prepare the civil design. It is common engineering practice to perform many different kinds of design work based on an existing conditions plan prepared by others.

Q8. Questions and Answers 8 through 10 of Ms. Allen's testimony address issues she has concerning potential stormwater impacts from the Project. How do you respond?

A8. Answer 8 is mostly concerned with the development on steep slopes and erodible soils, and the potential for this to have adverse effects due to stormwater runoff and erosion. The design and implementation of erosion and sediment control practices during construction address this concern. Downslope measures such as silt fence and Silt Soxx will be installed to prevent sediment from leaving the site. In addition, all disturbed areas will be temporarily stabilized with mulch within 14 days of initial ground disturbance. Aggressive seeding and/or stabilization with stump grindings will be performed to ensure a permanent vegetative cover in the area of the array and other disturbed areas. Answer 9 is concerned with the potential for increased stormwater runoff that will be detrimental to the Second Branch of the White River. The implementation of EPSC measures during installation as described above, along with the existing vegetated buffers between the site and the Second Branch will prevent sediment from leaving the site and impacting the receiving water. All disturbed areas must be completely stabilized with vegetation, stone, mulch, stump

grindings or gravel prior to completion of the Project. Furthermore, the leading cause of increased runoff from any site is typically the addition of impervious surfaces. This site adds approximately only 0.3 acres of impervious surface, which is well below the State of Vermont July 1, 2022 threshold of 0.5 acres of impervious surface and therefore will not require an operational stormwater permit. This relates to Ms. Allen's Answer 10 regarding stormwater permitting for the Project. The Project will obtain a Construction Stormwater Permit, and is not required to obtain an Operational Permit. The State of Vermont has maintained that solar panels are not jurisdictional impervious surface. The ground under the panels remains able to infiltrate runoff and grow vegetation.

We have worked on dozens of sites that required State of Vermont Construction Stormwater Permits since the program was implemented in 2003. It is our experience that the measures implemented on sites to be in compliance with these permits are effective at preventing erosion and preventing sediment laden stormwater from leaving the site. The EPSC measures to be implemented at the Project site will prevent unreasonable soil erosion or a reduction in the capacity of the land to hold water resulting in a dangerous or unhealthy condition.

3. Conclusion

Q9. Does this conclude your testimony?

A9. Yes.

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Q:PET:Binder.1-9: Admit that you are not a Vermont licensed professional engineer.
A:PET:Binder.1-9: I am not a Vermont licensed professional engineer.

Q:PET:Binder.1-10: Admit that you are not a Vermont licensed civil engineer.
A:PET:Binder.1-10: I am not a Vermont licensed civil engineer.

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Randolph Davis Road Solar LLC for a Certificate of public good, pursuant to 30 V.S.A. §§ 248 and 8010, authorizing the Installation and operation of a 500kW group Net-metered solar electric generation system in Randolph, Vermont	Case No. 21-2939-NMP

MICHAEL BINDER'S RESPONSE TO PETITIONER'S SECOND SET OF INFORMATION REQUESTS

July 15, 2022

Q:PET:Binder.2-1: Admit that you have never prepared an application for coverage under the Vermont Department of Environmental Conservation ("DEC") Construction General Permit ("CGP") 3-9020. If denied, provide all applications.

A:PET:Binder.2-1: Admitted.

Q:PET:Binder.2-2: Admit that you have never prepared an erosion prevention and sediment control ("EPSC") plan for a Vermont construction stormwater discharge permit application.

A:PET:Binder.2-2: Admitted.

Q:PET:Binder.2-3: Is it your opinion that the project is not eligible for coverage as a Low Risk project under the DEC Construction General Permit 3-9020? If so, explain the basis of your opinion and produce all documents that support your opinion.

A:PET:Binder.2-3: I do not have an opinion on this question.

Q:PET:Binder.2-4: With respect to Exhibit MB-32, admit that you have not obtained a topographic survey of the Project site from a licensed Vermont surveyor. If denied, produce the survey.

A:PET:Binder.2-4: Admitted.

I declare that the above statement is true and accurate to the best of my knowledge and belief. I understand that if the above statement is false, I may be subject to sanctions by the Commission pursuant to 30 V.S.A. § 30.

Dated in Randolph, Vermont this 15th day of July, 2022.

Michael Binder, *pro se*
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